

JPRS 81152

28 JUNE 1982

# China Report

AGRICULTURE

No. 212

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28 June 1982

# CHINA REPORT

## AGRICULTURE

No. 212

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# I. GENERAL INFORMATION

## SCIENTIFIC FARMING SAID SEQUEL TO PRODUCTION RESPONSIBILITY SYSTEMS

Beijing RENMIN RIBAO in Chinese 26 Apr 82 p 5

[Article by He Kang [0149 1660]: "Agricultural Modernization and Reliance on Science To Develop Agriculture"]

[Text] Basic Characteristics and Survey of Development of Modern Agriculture

The fundamental characteristic of modern agriculture is the application of modern science and technology plus investment of substantial material and energy to gradually replace traditional agriculture founded on experience with modern agriculture founded on science. Generally speaking this means making production techniques scientific, mechanizing the tools of production, and socializing the organization of production.

First, making agriculture scientific. This is the wide application of agricultural production of all sorts of advanced scientific techniques. Agricultural science is a scientific system that is strongly all encompassing and very broad in scope. It includes various aspects upward to astronomy, downward to geology, and sideways to biological and human activities. Steady development of agricultural science makes agricultural production steadily rise to new levels. For example, in the field of genetic breeding the use of hybrid heteroses to breed short stemmed, lodging resistant and disease and insect pest resistance high yield varieties plays a tremendous role in increasing output. During the 1930's corn yields in the United States were 200 jin per mu, but beginning in 1936 hybrid corn varieties were universally extended to cultivation, and now yields average 950 jin per mu. The world's so-called green revolution has resulted primarily from the extension to cultivation of superior varieties of Mexican wheat and Philippine rice. Formerly neither of these countries was self-sufficient in grain, but with the extension to cultivation of fine varieties plus the use of irrigation and chemical fertilizer they have now become self-sufficient. In the realm of livestock, Danish lean pork long white hogs have one more set of ribs than common hogs, and Dutch Haisaikesi [phonetic] hybrid chickens can produce 260 eggs annually, each egg averaging a weight of more than 60 grams. Speed of growth of hybrid poplar trees is double that of common varieties. Today throughout the world chemical fertilizers are developing in the direction of concentration, complexity, slow release, and liquification. Emphasis is on comprehensive prevention and control of crop diseases and insect pests with

the use of pesticides of high effectiveness, low toxicity, and low residualness to replace pesticides of low effectiveness, high toxicity, and high residualness. Only 1 gram per mu of a newly discovered Dalmation chrysanthemum fat need be used to remove insects. Herbicides are used for the elimination of weeds, and ways of avoiding plowing or doing little plowing are being used in farming to save one-third or more energy and to prevent erosion as well. These techniques are truly changing with each passing day.

Agricultural biology is now breeding a new technical revolution, principally in the several fields of photosynthesis, biological nitrogen fixation, and genetic engineering. For example in photosynthesis, right now the efficiency of most crops in using solar energy for photosynthesis is only 1 percent, and probably 2 to 3 percent for high yield crops. If the photosynthesis efficiency of plants could be raised 1 percent, agricultural outputs could be greatly increased. Another example is biological fixation of nitrogen. If rice and wheat were able to grow root nodules as soybeans do and fix nitrogen from the air, a large saving of nitrogenous fertilizer could be effected.

Second, mechanization. Mechanization has gone through a fairly long process in every country. The trend of development today is toward high horsepower for combined operations. The farm equipment pulled by a 100 horsepower tractor operated by a single person could complete furrowing, sowing of seeds, fertilization, and hoeing of weeds all at one time. Likewise the entire production process from field work and hauling to cleaning of grain, drying, storage, and processing are all mechanized.

A high degree of mechanization has also appeared in the mechanized raising of livestock and growing of crops. For example, in raising chickens, the feeding, watering, and clearing away of manure in chicken coops is all automatically controlled. One or two people can take care of more than 100,000 chickens.

Third, socialization of agriculture. From a basis of regionalization and specialized production, development has become a socialized and scientifically managed production system in which supply, production, and marketing are closely linked. The change is from a small but complete and self-sufficient natural economic traditional agriculture to a commodity economy of agricultural enterprises.

Socialization requires a process of formation. At the outset is a regionalization of production with the gradual formation, on the basis of local resources, soil, and climatic conditions, of locally concentrated production of certain major agricultural commodities. For example, in the American corn belt, wheat belt, and dairy cow and livestock belt, this process proceeded to specialized farms, with the formation of specialized chicken farms, cotton farms, and vegetable farms. After the 1950's further vocational specialization occurred. In agriculture, a large number of jobs are specialized such as the supply of seed being done by seed companies, hauling done by hauling companies, harvesting done by companies specialized in harvesting, and even the spraying of pesticides being done by special aircraft companies. The regionalization,

specialization, and socialization of agriculture and the increasingly intensive scientific care are all products of the development to a certain stage of social productivity and a commodity economy. They play a tremendous role in equitable use of natural resources, the application of advanced science and technology, and in increasing benefits from production.

Scientificness, mechanization, and socialization are the three basic characteristics of modern agriculture. These three characteristics are mutually related and mutually advancing. What is their essential quality? Their essential quality is to found agriculture on modern science, to use modern science and technology and modern industry to equip agriculture, and to use modern economic science to manage agriculture. The goal is to create a high output, superior quality, low consumption farming, forestry, livestock raising, sideline occupation and fishery production system, and a fairly highly transformed and efficient agricultural ecological system that uses resources in a sensible manner and protects the environment in order to satisfy the needs of humanity.

It may be seen from the foregoing that agricultural modernization is a historical process of technical transformation and economic development whose ramifications are very broad and which is very strongly all encompassing. Thus, the modernization of agriculture is a comprehensive concept and a historical concept. It is also a relative concept. To speak of the modernization of agriculture in terms only of mechanization, of bringing all farmland under irrigation, and of electrification is, it is feared, too simple.

Because the national situation in each country differs, the road to modernization is also not entirely the same. There are more or less three kinds of roads to modernization in the world. One kind is that of countries with large amounts of land relative to population, with insufficient workforces and in which industry is very developed, such as the United States, Canada, Australia, and the USSR. The first step in their modernization of agriculture has been an emphasis on mechanization. Another kind of country is one such as Japan in which population is large relative to land, each person having only 7 fen of cultivated land. They emphasize biological and chemical techniques, use fine varieties and chemical fertilizers, and go in for the building of farmland. The third kind is found in some of the countries of western Europe such as France and Germany, which are industrially advanced and in which neither the amount of cultivated land nor workforces suffice. Consequently, they simultaneously develop both mechanization techniques and biological techniques. Actually, each country takes its own road to modernization on the basis of its own situation. It has its own emphasis, but it does not just do a single thing but rather coordinates techniques of all kinds for the gradual modernization of its agriculture.

Effectiveness of foreign agricultural modernization. First is a very great increase in labor productivity rate; second is a high commodity rate and high yields per unit of area. In addition, as a result of the development of production, the gap between city and countryside and the difference between industrial and agricultural earnings gradually narrows.



Problems in the modernization of agriculture abroad. Apart from the contradictions between capitalist private ownership and socialized production, and the disparities between the poor and the rich, the main problem in agriculture itself is high energy consumption, high investment, and very great increase in costs. Furthermore, use of large amounts of chemical fertilizer and pesticides has brought about environmental pollution; irrational clearing of land and denudation of forests has also given rise to soil erosion and deterioration of the environment.

Many scholars believe that in future agriculture must turn toward greater reliance on science and biological techniques and strive for greater economic benefits rather than consume large amounts of energy and funds as has been done in the past.

Looked at in terms of development trends, the modernization of China's agriculture requires taking into account not only China itself but also taking account of the world. We cannot think only of our present; we must also think about our posterity. We must draw on the experience of others and learn from foreign experiences to avoid possible abuses.

#### Development of Agriculture Under the New Rural Situation Requires Reliance on Science

Development of agricultural production presently relies on policies and on science. Once agricultural production systems of responsibility have been substantially settled, the next step will be an emphasis on reliance on science. This is a change. Now that the situation in rural villages is good, peasants want science. In many places a mass fervor for the study and use of science has arisen. The building of China's agricultural production on a foundation of science is a first step in the gradual modernization of agriculture.

In proceeding from present day realities, agriculture's reliance on science requires emphasis on the following several tasks.

First is to do a good job of surveying agricultural resources and doing agricultural zoning, readjustment of the structure and patterns of agricultural production, and bringing a halt to the deterioration of the ecological environment. A good job has to be done in surveying natural resources such as soil, water, climate, and biology, and on socio-economic conditions followed by agricultural zoning and putting forward proposals about the production patterns of each area, of measures to increase output, and plans for development. Accumulated resources need to be inventoried and crop patterns properly laid out. This is a first step in agriculture's reliance on science; it is a basic task in the adaptation of general methods to local situations, in giving tailored guidance for production, and for gradually modernizing agriculture. Throughout the country 1,380 counties have begun zoning work, and 277 counties have turned in zoning reports. During the past few years, they have emphasized county zoning and surveys of soil and water resources as well as of key areas for development. The following have emerged through zoning

requirements: first is the need to bring to a halt the destruction of resources and to put forward genuinely workable measures for their protection. Second is an equitable readjustment of the production structure and of crop patterns with development of economic diversification. Third is the need to come up with effective measures for increasing production right now; and fourth is to put forward proposals for long-range plans and a development scheme.

Second is to promote effective means of increasing production through adaptation of general methods to local situations. One way is with fine varieties. Fine varieties can usually increase yields by 10 percent. A system for breeding, reproducing, and promoting fine varieties should be established for the spread of existing fine varieties before 1985. Fine variety crop patterns should be regionalized, production should be specialized, processing should be mechanized and quality should be standardized. Another way is through scientific fertilization with the equitable readjustment of proportions of nitrogenous, phosphate and potash fertilizer. Currently probably 1 billion mu lacks phosphate and 300 million mu lacks potash. Were phosphate and potash production and imports to be increased and the methods of fertilizing improved, results obtained from fertilizer could be greatly improved. Another way is use of water. Most important is improvements in management for sensible use of water to take full advantage of existing water to increase output. A fourth way is plant protection. The make-up of pesticides has to be changed and farm machines for applying pesticides improved, with the spread of all encompassing measures for prevention and control. A fifth way is through research on techniques for farming, storage, processing, transporting, and marketing, with improvements being made on the basis of needs for development of production and economic diversification.

Third, serious attention must be given intelligent development of investment, and vigorous strengthening of agricultural education, scientific research and the extension of technology.

First a good job has to be done in agricultural education and training. First should be good running of existing agricultural schools. Second should be a good job of reforming primary school education. Rural middle and primary schools should increase their agricultural courses, some middle schools being converted to agricultural middle schools. Third should be a strengthening of cadre training, particularly leadership cadre training. In addition, outstanding middle age and young cadres should be selected to go to agricultural schools to improve their knowledge. Fourth should be a good job in peasant education with a good job done in county, commune, and production brigade peasant education.

Next is the need to readjust and augment agricultural research work. Today there is both a shortage of personnel, equipment, and funds for agricultural research and also duplication of courses and dispersal of forces. During the next few years, leaders should concentrate forces for readjustment and set a direction, tasks, and a cooperative division of labor for central government, provincial, and prefectural scientific research units, with the organization of attacks on key problems.

Still another need is to genuinely strengthen the work of spreading science and technology with emphasis going to the strengthening of county agricultural promotion forces. All jurisdictions should arrange, in order of priority, existing scientific and technical achievements, good experiences from other places, and technology used abroad and, on the basis of local needs, work up plans and do a solid job of promoting them little by little over a period of time. We also propose that each commune be able to gradually assemble three to five agricultural technicians who have graduated from higher or secondary technical schools to give intelligent assistance to communes and brigades on behalf of the country. Advocacy should be given the organization of technical service companies and peasant scientific farming societies to promote responsibility systems of technical contracting, and for energetic strengthening of publications, cinemas, broadcasts, exhibitions, and such activities for the popularization of science.

Fourth is energetic establishment of a huge red and expert agricultural science and technology cadre corps. It is hoped that leaders on all levels will attach serious importance to and do a good job with agricultural scientific and technical personnel, have confidence in them politically, give them support in their work, show concern for their livelihoods, and do a good job in evaluating, examining, and providing additional training for them as well as in returning agricultural technical cadres to their units. Last year Jiangsu Province made a planned evaluation of more than 10,000 of its commune farm science station and peasant technical personnel. More than 7,300 of them were found to meet secondary technical school standards as a result of testing, and they were issued certificates as well as a monthly technical stipend from the prefecture's public funds and from communes and brigades. This gave sudden impetus to rural science and technology work throughout Jiangsu Province, and rural youths felt this was something to strive for. This merits serious consideration by all jurisdictions.

9432

CSO: 4007/397



## NATIONAL

### BRIEFS

**SIDELINE PRODUCT PROCUREMENT**--As of the end of December, 1981, 52.43 million dan of cotton had been procured nationally. This was a more than 4 million dan increase in quantity procured over 1980, and it is anticipated that an additional approximately 3 million dan remains to be procured. Jute and amheri hemp procurement already totals 10.38 million dan for a 30 percent overfulfillment of plan. Flue-cured tobacco procurement amounts to more than 23 million dan, a 36 percent overfulfillment of plan. Light and textile raw materials, such as ramie, sun-cured tobacco, wool, sheepskin and silkworm cocoons also overfulfilled procurement plans. National procurement of tea in 1981, amounting to 5.43 million dan, reached an all-time high. Apple procurement was 360,000 tons more than during 1980, and more than 70,000 tons of citrus fruit was procured over that in 1980. [Text] [Shanghai JIEFANG RIBAO in Chinese 19 Jan 82 p 3] 9432

**LOAN RECOVERY**--A dispatch from Beijing dated 18 January reports issuance of numerous agricultural loans during 1981 by rural financial units in China, and a high recovery rate, with extremely good results being won. Preliminary statistics from the Chinese Bank of Agriculture show that during 1981 the Bank of Agriculture and credit cooperatives together issued 30 billion yuan in agricultural loans, 27.2 billion yuan of which they recovered, for a recovery rate of 91, an all-time high. [Text] [Shanghai JIEFANG RIBAO in Chinese 19 Jan 82 p 3] 9432

CSO: 4007/256

ANHUI

BRIEFS

WHEAT HARVEST--As of 5 June, Xiaoxian County in Anhui had harvested all of its 900,000 mu wheat. [OW111211 Hefei Anhui Provincial Service in Mandarin 1100 GMT 9 Jun 82 OW]

CSO: 4007/434

BRIEFS

GRAIN MILLING SYMPOSIUM--Beijing, May 29 (XINHUA)--More than 100 foreign experts and 50 Chinese specialists are scheduled to attend an international symposium on grain milling and baking, according to the Ministry of Commerce. The symposium, jointly sponsored by the Chinese Ministry of Commerce and the Sosland Publishing Company of the U.S., will be held in the seaside summer resort of Beidaihe, east of Beijing, from September 2 to September 15. Topics for discussion at the symposium are: grain handling and preservation, train processing and flour milling, baked food production, and grain markets analysis. About 30 technical papers are expected to be submitted to the symposium and a technical exhibition will be held in conjunction with it. [Text] [OW291252 Beijing XINHUA in English 1228 GMT 29 May 82]

WATER PROJECTS--Beijing, May 29 (XINHUA)--Beijing has resumed construction on two major water diversion projects, part of the effort to ease the current water shortage resulting from sustained dry spells in the past two years, the Municipal Water Conservancy Bureau announced today. Construction on the projects began in 1970 but was discontinued later due to lack of funds. One of the projects being built in Yanqing County will divert an annual average of 100 million cubic meters of water from the Baihe River into the Guanting reservoir. The Guanting reservoir, which was built in the early 50's, is a major supplier of water for Beijing. Owing to the expansion of industry and agriculture and the dry weather, the amount of water stored in the reservoir is dwindling. The other project, now being build in Shunyi County, is expected to divert an annual average of 80 million cubic meters of water from the Chaobai River into Beijing's running water system, according to the bureau. It will mainly benefit the Beijing No 1 Heat and Power Plant, which consumes 250 million cubic meters of water a year. The plant will recycle the Chaobai River water to reduce its annual consumption from 250 million cubic meters to 50 million cubic meters. [Text] [OW291302 Beijing XINHUA in English 1234 GMT 29 May 82]

CSO: 4020/138

## FUJIAN

### CONTROL OF PORK MARKET, BANNING OF MONOPOLIES EMPHASIZED

Fuzhou FUJIAN RIBAO in Chinese 10 Feb 82 p 2

[Commentary: "Banning 'Pig Monopolization'"]

[Text] The banning of "pig monopolization" by the people's government of Jianning County helps safeguard the policy of state purchases, stabilize prices and protect the people's living standards. Jianning County has done the right thing and done it well. The control of the pork market by secondary dealers and its adverse effect on the fulfillment of purchase quotas was seen not only in Jianning County; there have been signs of it in other places as well. In some places, in fact, secondary dealers and pig monopolists are even more ruthless in slaughtering pigs and selling them at high prices, gravely interfering with purchase quotas and seriously affecting the stability of prices and the people's livelihood. We should give full attention to this matter.

Pigs are a class II commodity under the state plan and are an important food item for both the military and civilians. Party committees and governments at all levels should strengthen their leadership in this matter, educate the cadres and the masses to see the importance of the state and the state plan, and earnestly see to it that purchase quotas on pigs are fulfilled. In localities where purchase quotas have not been fulfilled, no one should be allowed to slaughter pigs and sell them on the market. Even in localities where purchase quotas have been fulfilled, only peasants should be allowed to slaughter their own pigs (or have others slaughter for them). No secondary dealers or speculators should be allowed to slaughter pigs and sell them at high prices. All violations must be punished. For pigs sold at negotiated prices by peasants who raised and slaughtered them themselves, government departments should prescribe a certain price range, and no one should be allowed to drive up prices. It has been shown in localities that have carried out these policies that not only have the purchase quotas on pigs been fulfilled well, but the market prices have also been stabilized. On the other hand, in localities where the leadership erroneously believes that the rural responsibility system of production has made it impossible to fulfill the purchase quotas on pigs, where the leadership is immobile, helpless and afraid to deal with the illegal slaughtering of pigs and driving up of prices by secondary dealers and

speculators, purchase quotas have been underfulfilled and market prices destabilized. It would be very dangerous to let this situation go on. All localities confronted with such a problem should follow the example of Jianning County and take vigorous steps to ban pig monopolization, regulate prices, and insure that purchase quotas on pigs are fulfilled.

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CSO: 4007/277

## FUJIAN

### NANPING CITY SETS UP PIG PRODUCTION BASES

Fuzhou FUJIAN RIBAO in Chinese 10 Feb 82 p 2

[Article by Guo Xunan [6753 8113 2344], Hong Zhenya [3163 2182 0068] and Yang Bin [2799 2430]: "Greater Pig Supplies, More Stable Pork Prices, Commodity Pig Bases Prosper in Nanping City"]

[Text] The commodity pig bases in Nanping City have been flourishing. Last year, these bases supplied 12,763 pigs to the city, accounting for 47.5 percent of all pigs supplied to the city from units below. These bases have contributed to increasing meat supplies to the city and to stabilizing meat prices.

A few years back, pig-raising in the city was developing very slowly. Every year, despite strenuous efforts, purchase quotas in pigs were hard to fulfill. For 7 months in 1977, no pork was available at all on the market, and people were greatly dissatisfied. To change this, the municipal party committee decided in 1979 to set up six commodity pig bases in suburban communes and brigades, such as Dongkeng and Xiqin. With the support of the province, prefecture and city, 43 pig sties were built, plus six processing warehouses, and one small reservoir, and some 385 mu of farmland were set aside for growing feed. The bases are put under the leadership of the communes and brigades where they are located, and are managed by capable cadres and responsible commune members assigned by them. The city's food company has the right to allocate the pigs. With pig-raising as the main production, all six bases maintain a diversified economy, with sheep, poultry and fish raising, plus 580 mu of hill land planted in orange, persimmon, pear and other fruit trees.

In the very first year they were established, the bases showed their worth by providing more than 4,000 pigs to the city, which accounted for 20 percent of the pigs supplied to the city from lower units. But all the bases ran a deficit every year. This was because in the first 2 years a great deal of effort went into capital construction, people lacked experience in management, and the distribution system was such that the stockmen all "ate from the same pot of rice," which dampened work enthusiasm. Some stockmen went back to farm work in the brigades. Starting this year, however, a system of responsibility has been introduced in the bases, bringing about an immediate change. The system consists of such features as fixed jobs and work norms, remuneration on the basis of production, and rewards combined with penalties. Contracts are signed between the bases and

the stockmen providing for fixed work, fixed remuneration, fixed feed, fixed rate of mortality, fixed expenditures and fixed rewards and penalties. As more work gets more rewards, work enthusiasm rises along with a sense of responsibility about one's job. Instead of running deficits, the bases have begun to make a profit.

The bases play a positive role in stabilizing pork supplies and pork prices in the market. For the National Day holiday last year, the city's food administration requisitioned only 26 pigs from the countryside but more than 1,200 pigs from these bases, which insured a full supply of fresh meat for urban consumers during the holiday. The consumers were satisfied. The city's food company has also set up two additional stores selling fresh meat at negotiated prices. The stores get 30-40 pigs every day from the bases so they can sell fresh meat every day. In addition to supplying fresh meat to restaurants, these stores help stabilize meat prices on the free markets.

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CSO: 4007/277



## FUJIAN

### JIANNING COUNTY BANS PIG MONOPOLIES

Fuzhou FUJIAN RIBAO in Chinese 10 Feb 82 p 2

[Article by Jiang Jingzhang [3068 2417 4545], Jiang Changzhi [5592 7022 0237] and Wu Wenzheng [0702 2429 2973]: "Jianning People's Government Bans Pig Monopolies and Reinforces Market Regulation"]

[Text] Since the people's government of Jianning County took measures to reinforce market regulation and ban the "pig monopolies" in urban and rural markets, the number of pigs purchased by the state has increased and the price of pork has come down more than 20 percent.

To enliven its urban and rural markets, Jianning County allows commune members to put their pork on the free market after they have fulfilled the purchase quotas for pigs. But some pig dealers, having no licenses but aiming at exploiting the difference between fixed and negotiated prices, went all out to buy up commune members' pigs at high prices. They took advantage of the laxity of certain departments to monopolize the market and drive up the price of pork--from 1.30 yuan to 1.60 yuan, then to 1.80 yuan and even to 2.00 yuan per jin. The rise in pork prices drove up the price of other nonstaple foods, lowering the living standards and causing widespread resentment.

Pigs are a class II commodity important to military and civilian consumption and subject to purchase quotas. The leadership of the county people's government made a thorough investigation of the activities of the "pig monopolies" and decided that their monopoly of the pig market and control of pork prices must not be allowed to continue, the inertia and laxity of the leadership must be overcome, and effective countermeasures must be taken. A conference attended by leading members of commercial departments, industrial establishments, supply and marketing cooperatives, food supply depots and the communes was held to discuss ways to reinforce market regulation. Strong measures were adopted to ban all "pig monopolization" activities, allowing only commune members to market pork after they have fulfilled the purchase quotas. Since banning the "pig monopolization" activities, the number of pigs purchased increased sharply starting last November. By December, pigs purchased by the state and pigs supplied to higher level units exceeded quotas by 20 percent and 13 percent respectively. Market prices for pork went down from 1.60-1.80 yuan to 1.30-1.50 yuan per jin. The people were happy.

9924

CSO: 4007/277



BRIEFS

DIVERSIFIED ECONOMY--Fujian's Jiangle County promotes diversified economy by developing 2.25 million mu of the hilly land in the county. Since last winter, the county has expanded its economic forest with tea plants, tangerines and mulberry trees by 15,000 mu, bamboos by 30,000 mu and timber forest by 60,000 mu. [Fuzhou Fujian Provincial Service in Mandarin 1120 GMT 10 Jun 82 OW]

CSO: 4007/434

## GANSU

### BETTER RESULTS FROM FEEDING HOGS COMPOUND FEED REPORTED

Lanzhou GANSU RIBAO in Chinese 2 Feb 82 p 2

[Article from "Grain and Oil Situation," published by Provincial Food Department: "Jiuquan Prefecture Actively Launches Compound Feed Production and Test Feedings. A Major Measure in Rapid Development of Animal Husbandry and Livestock Raising Industry"]

[Text] Jiuquan Prefecture grain departments have actively launched compound feed production and test feedings with the cooperation and support of units concerned, winning rather good results that will be promoted throughout the prefecture.

Last year, in coordination with commercial, farm machine, scientific and technical, and commune and brigade enterprise management units, Jiuquan Prefecture grain departments built five compound feed processing plants in Anxi, Jinta and Jiuquan counties in accordance with the principle of smallness paramount, collective investment paramount, semi-mechanization paramount and renovation paramount. As of the end of 1981, one site had gone into formal production, another site was running trial production, and the three remaining sites were installing equipment and would rapidly begin trial production and full production. In order to launch feeding with and promotion of compound feeds, the prefecture planned 19 separate compound feed test feeding sites. As a result of the test feedings, 13 compound feed formulas suitable for local use were preliminarily selected.

Judging from results of test feedings, use of compound feeds to raise livestock possesses the following advantages:

(1) Improved feed utilization rate. Following test feedings using compound feeds, for each jin increase in hog weight, consumption of concentrated feeds declined from the former 5 jin to 3.7 jin, and consumption of coarse fodder declined from the former 9 jin to 0.7 jin. From the time that shoats were weaned 45 days following birth until they were taken out of inventory at a weight of 130 jin after having been fed compound feed, their total consumption of concentrated feed was 436 jin, a 178 jin reduction from previous feed consumption. Extrapolating this figure to the whole prefecture means that had the 110,700 head of hogs removed from inventory (the 1980 figure) been fed with compound feed, more than 19.7 million jin of grain could have been saved, or if this amount of grain had been used to make compound feed, an additional more than 45,000 fat hogs could have been raised. A saving of more than 19 million jin of coarse fodder could also have fed more than 13,000 head of cattle, or more than 32,000 head of sheep and goats.

(2) Shortening of feeding time. In 1980, the prefecture raised somewhat more than 233,600 hogs, but removed only 110,700 head from inventory, an inventory removal rate of 47 percent. Each hog was fed for a period of about 2 years. Concentrated test feedings with compound feeds greatly shortened feeding time. Shangsangfenba Brigade in Zhongdong Commune, Jinta County, selected six stiff hogs that had been kept in inventory for 4 or 5 years for test feeding with compound feed over a period of 63 days, each hog averaging a daily weight increase of 1.1 jin and their individual weight increasing from 86 jin to 153.1 jin. At Zhongjie Third Brigade, four 67-day-old shoats were trial fed for 224 days. Their weight increased from 12 jin to more than 130 jin. Four 60-day-old shoats at the county fine breed hog farm showed weight increase from 20.5 jin to more than 130 jin after 135 days of trial feeding, and were removed from inventory within 6.5 months. Figuring a year from the birth of shoats until removal from inventory of fattened hogs fed on compound feeds, the ex-inventory rate for hog raising in the prefecture could be almost doubled.

(3) Lowering of feeding costs. During the trial period when 60 head of hogs were fed compound feeds at two test sites, weight gain amounted to 5,313.7 jin. Figuring a cost of 0.60 yuan per each jin live weight, output value was 3,169.46 yuan. Total feed consumption was 22,906 jin, at a cost of 0.12 yuan per jin, for a total cost investment of 2,429.22 yuan. Profits amounted to 740.24 yuan, or an average profit of 12.34 yuan, or 23.4 percent per head. Shoats weaned at 45 days and fed for removal from inventory upon reaching 130 jin consumed compound feed at an average of 436 jin per head. Figuring each jin at 0.12 yuan, costs amounted to 52.32 yuan per head. When fed with simple feed, consumption averaged 614 jin per head for costs totaling 73.68 yuan per head, or 21.36 yuan higher than the cost of feeding with compound feed.

Now the Jiuquan Prefecture units concerned are in the process of summarizing these experiences and are making appropriate material preparations. The prefecture has also trained 78 mainstay technicians, and are in the process of planning directed promotion throughout the prefecture as a whole.

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CSO: 4007/256

'NANFANG RIBAO' DISCUSSES HAINAN AGRICULTURE

HK070943 Guangzhou NANFANG RIBAO in Chinese 2 Jun 82 p 2

[Article by Hou Xueyu [0186 1331 3558]: "Correctly Handle a Number of Relationship Problems in Building Great Agriculture on Hainan Island"]

[Text] Editor's note: Professor Hou Xueyu, member of the scientific council of the Chinese Academy of Sciences and a famous ecologist, wrote this article for this newspaper after he participated in the scientific comprehensive survey of the building of great agriculture and ecological balance on Hainan Island. Excerpts from that article will be published in this paper in over 2 days. [end editor's note]

Great agriculture includes plant production and animal production. Animals cannot produce food themselves. They live directly or indirectly on plants. Therefore, animal production constitutes the process of transforming plant products into such animal products as meat, eggs, milk, skin, hair and feathers. So great agriculture itself is a transformation process between matter and energy. To promote the ever-increasing biological production output and bring about a benign cycle in the natural world, it is necessary, in the light of certain ecological laws, to adopt scientific technical measures which are in conformity with science. That is, it is necessary to continually maintain the ecological balance between matter and energy exchange in the production process so that planting industries, forestry, economic forestry, animal husbandry and aquatic product rearing can develop. Otherwise, disrupting ecological balance will invite a series of penalties from the natural world. For this reason, in order to build great agriculture, it is necessary to maintain an ecological balance in a regular and sustained way so as to ensure and increase the output of biological resources and their productive forces. This is the required basic point of view in accelerating the development of agriculture, forestry, animal husbandry, tropical crops and fishery on Hainan Island.

Below I would like to emphatically discuss my ideas on a number of problems in interrelationships in building great agriculture on Hainan Island.

#### 1. Correctly Handle the Relationship Between Exploitation and Protection in Utilizing Biological Resources

In the natural rain forest and seasonal rain forest on Hainan Island, there is a lot of valuable timber, such as mu seng [2605 3932], zi jing [1311 0079], hua li [5363 2746], jiang xiang Tan [7100 7449 7806 2905], green plum, po lei [0980 1093], mesua ferrea, Hainan cephalotaxus drupacea, litchi and lujun pine. In the forests there are still many ornamental flowers and plants, such as orchidaceous plants and medicinal plants, chun sha ren [2504 3097 0088], yi zhi [4135 2535] and devilpepper as well as calamus rotan and white rattan which are used to weave rattan article furniture. After the destruction of forests, these shade-demanding and hygrophilous industrial plants are simply unable to grow. Birds, such as green pigeons, parrots, quails, partridges, gallus bankivas, crows and magpies, turtledoves, creasted mynas, woodpeckers and babblers, are numerous on Hainan Island. They all have the forest as their home. The felling of forest trees has made it difficult for birds to multiply and live and has resulted in a drastic decrease in the number of all kinds of tropical birds. At the same time, such activities as looking for food, mating, multiplying and living, of the tree-dwelling gibbons and macaque primates are all carried out in trees. Once the tropical rain forests disappear, these tree-dwelling mammals as well as moles and giant squirrels will find nowhere to live. As the saying goes: "When the tree falls, the monkeys scatter." Therefore, protecting the natural rain forest on Hainan Island means protecting the plant resources beneath the forest and the valuable animals and other reserves in the forest. Last November, I went to Australia to attend the 13th session of the international society of botany. Of the 13 proposals put forth by the assembly, 3 were proposals concerning the protection and study of tropical rain forest. China has only a meagre area of tropical rain forest which, is distributed on Hainan Island and Xishuangbanna [in Yunnan] and this calls for special and good protection.

The mangroves on Hainan Island are also very valuable. In the mid 1950's, China still had 150,000 mu of mangroves, but now it has been reduced to only 20,000 or 30,000 mu. The mangroves are distributed on the mud beaches in the intertidal zone and exist both in rivers and streams. Fishes, shrimps and crabs dwell in these mangroves. The crowing cover of that part of the mangrove above ground is luxuriant and green while under the ground there are close and numerous prop roots, snakelike roots and hardened roots which crisscross and are twisted. This is conducive to keeping stormy waves in check and protecting the enclosed embankments. People call the mangrove the "natural bodyboard of the seacoast." Thus, protecting the mangroves means protecting fishery, agriculture and the diversified economy.

While surveying along the coast, and particularly in such places as Wanning, Wenchang and Qionghai, we say people carrying coral lime in trucks. It was to be used as building material. It was really a pity. Coral is where eucheuma



grows and from the latter can be extracted agar-agar. Agar-agar is the raw material for making medical capsules and sugarcoating and agar-agar can also be used to cure high blood pressure and as a tonic. Sea cucumbers and fish also eat the algae living on coral. Burning coral to make lime means burning eucheuma, agar-agar, fish and sea cucumbers.

The above-mentioned natural forests in mountainous areas, mangroves along the seacoast and coastal coral are, on the one hand, themselves biological resources and also constitute the environment on which a series of animals and plants depend for existence. Therefore, we must not only rationally utilize but also protect them in a fairly good way. The argument claiming that protecting nature means "conservative thinking" and "naturalism" is obviously wrong. By protecting the natural biological resources, we mean protecting the capacity of resources to regenerate. Protection is a measure and utilization is the aim. Protection is aimed at better exploitation and utilization. Without protection, you can hardly talk about the permanent and continuous use of biological resources. We must not exploit the biological resources in a plundering way at the expense of long-term interests.

## 2. Correctly Handle the Intensive Farming and Extensive Cultivation in Increasing Grain Production

At present, although there are large areas of wasteland on Hainan Island, much wasteland and many barren hills are unsuited to developing grain crops because the soil fertility is poor; the gradient of the mountainous areas is great and water conservancy projects are underdeveloped. We must draw a lesson from the past experience in blindly expanding the area of farmland sown with grain crops. By exploiting mountainous areas with the slash-burn-and-abandon process, the per mu yield of "mountain products" was no more than 100 jin. The exploitation of mountainous areas with the slash-burn-and-abandon process resulted in the destruction of large areas of forests and serious soil erosion. Most of the flat tablelands are covered with sandy soil which is deficient in water and can hold neither water nor manure. Production output can hardly be ensured by planting grain crops on such soil.

Is it feasible to increase the number of multiple croppings? According to the present investigation of the five southern areas, the annual per mu yield of triple cropping of rice was only 500 jin, which was lower than that of double cropping of rice. The reasons for this state of affairs were mainly that the seasons were harsh and labor power was insufficient; the insect pest situation in midseason rice was serious; late rice precisely encountered the typhoon and low temperatures; the soil fertility was insufficient and so on. Proceeding from actual conditions, the most reliable way is still to carry out the cropping system of cultivating the land while farming it, that is to say, to practice the system of rotating and reversing paddy and nonirrigated-farmland industrial crops.

Take Chongpo commune of Ledong County for example. In 1980 the commune farmed 50,000 mu of early rice and total output was 13.1 million jin; in 1981, 4,500 mu of farmland was used to plant sugarcane and 500 mu for growing peanuts and fertilized water was concentrated on paddy fields. As a result, despite a reduction of 5,000 mu in the area sown with early rice, the total early rice output registered an additional increase of 2.15 million jin. In the very same year, the area sown with late rice was reduced by 5,000 mu but the total late rice output increased by 1.25 million jin. Some of the late-rice farmland was sown with peanuts. The total annual sums showed that the per mu yield of early and late rice increased from 764 jin to 1,022 jin; the increase in the total paddy output was 3.4 million jin and in addition, 17,000 tons of sugarcane and 320,000 tons of peanuts were reaped.

Why were there increases in both the per unit area yield and total output of paddy despite a reduction in the acreage of farmland sown with paddy? According to our analysis, first, in the past, peanuts and sugarcane were driven to hillslopes thus resulting in low yield. The production did not even cover costs. Now substituting peanuts and sugarcane in paddy fields has improved the production conditions and regulated the labor force. Each mu of sugarcane only needs 25 laborers while each mu of two-crop paddy needs 50 laborers. Sugarcane can be planted before the transplanting of early rice seedlings and thus the freed labor force can be concentrated on winding up the sowing of early rice before and after the beginning of spring. Thus we can keep clear of the outbreak period of yellow rice borers on the one hand and on the other finish harvesting early rice before the rainy season comes so as to prevent early rice from going mouldy and rotten. Second, spring drought on Hainan Island is relatively serious. After some of the paddy fields were planted with sugarcane and peanuts, the use of water was economized and thus the conserved water could be concentrated on early rice. Third, rotating paddy and dry-land crops helped regulate the paddy field soil conditions, such as moisture, fertilizer, air and heat, made the soil become aerated and prevented the emergence of reducing materials which are harmful to paddy roots. Peanut root-nodule bacteria can, in addition, fix and turn free nitrogen in the air into nitrogen fertilizer and peanut roots can be left in the fields as manure.

Another key problem in increasing grain production is Hainan Island is neutralizing its soil acidity. Apart from a small number of areas, most of the areas of the whole island have strongly acidic soils. This is detrimental to the growth of grain crops. It is advisable to neutralize the soil acidity by applying more limestone powder to the soil. This not only can provide the soil with nutrients, such as calcium and magnesium, increase the effectiveness of existing nutrients, improve the soil structure and increase the air permeability of the soil but can also slowly dissolve the manganese and aluminum poisons existing in acid soils, and particularly can be conducive to the multiplication of nitrifying bacteria and symbiotic and nonsymbiotic azotobacteria. Limestone can be found within the boundaries of Dan, Yan and Ledong counties. We can grind limestone to powder and directly apply limestone powder to farmland. It is not necessary to burn limestone into lime.

Besides, the improvements in water conservancy and in product varieties, we must not neglect the mixed application of nitrogen, phosphorits and potassium fertilizers and organic fertilizers or green manure and the prevention and control of plant diseases and elimination of pests.

### 3. Correctly Handle the Relationship Between Rubber and Other Tropical Crops in Developing Tropical Crops

Hainan Island has more than 70 years of history in introducing and cultivating fine varieties of rubber. Before liberation, China had no more than 40,000 mu of rubber with the annual dry rubber output being 600 tons. After liberation, rubber production was developed on a large scale. At present Hainan Island already has over 4.3 million mu of rubber plantation with the annual dry rubber output being 70,000 tons. All this is a significantly great contribution to the country.

At present, one important way to increase rubber output is to increase the per area unit yield on the basis of the existing acreage under cultivation. In this respect, the South China Tropical Crops College and the South China Research Institute have achieved a series of research findings. They adopted such measures as the terracing of mountain slopes, plant covering, [word indistinct] improving, application of fertilizers, the building of forest networks and the turning of seedling plants into budding plants. So long as the popularization of these measures are upheld, it is entirely possible to increase the present per mu yield of 50 kilograms of dry rubber of the state farms to over 100 kilograms. The natural environment of Dan County where the college and research institute are located belongs to a region which frequently suffers from "moderate gales and light cold currents." Their experimental plots have produced more than 200 kilograms per mu. If the farms in the southern areas of the island which have relatively favorable climatic conditions try hard to reach half of the output of the experimental findings of the "college and research institute," that is, the level of 100 kilograms per mu, this will mean that these farms have increased their production by 100 percent. This is the equivalent of expanding the acreage under cultivation by 100 percent.

While increasing the per area unit yield of rubber, an important strategic principle for bringing the strong points of Hainan Island into play is to develop, in the light of the natural characteristics of the various localities, other tropical crops in a planned way in the regions which are unsuitable for planting rubber. Coconuts are a traditional crop of Hainan Island. Cocunuts have many uses and every part of the coconut is useful. They can adjust to various kinds of soils. They can grow very well in the seashore saline soil which are not suited to growing other crops. Furthermore, an ordinary force 3 or 4 wind will not affect its growth, development of bearing of fruit and its output will not be greatly affected by a force 7 or 8 wind. Coconuts can be developed along the coast of the whole island. The areas with low elevation along the coast within Nansi County are the most suitable places for developing coconut production.



Betel has not always been one of the important cultivated crude drugs from South China. The masses in the various southern counties [word indistinct] betel nut as a habit. At present our country has to import 50,000 dan of betel nut from southeast Asian countries every year. In order to meet domestic demands, developing betel nut production in a planned way in the mountain valleys and gullies, on the riverbanks and lands scattered around the fields of the central mountainous areas with an elevation under 300 meters should be a task not to be ignored for Hainan Island.

Hainan Island has a history of 50 years in planting cashews, which is one of the world-famous dry fruits. Their growth is restricted by temperature factors in a most rigid way but they are resistant to aridity and wind. On the other hand, too much rain will be harmful to its blooming and its bearing of fruit. As far as the other crops are concerned, the soil fertility of the sandy soil along the southern seashore is insufficient. However, cashews can normally grow and bear fruit there. Therefore, cashews do not vie with other tropical crops for land. Cashew production can be vigorously popularized in the tableland in the southeastern areas of the island where the dry season is obvious, sunlight is abundant, warmth is rich and the typhoons are relatively rare.

Temperature does not constitute a restricting factor for the planting of robusta coffee in Hainan island. The growth of robusta coffee needs a shady and wet habitat in which rainfall is fairly well-distributed. Robusta coffee can be popularized in the eastern areas where shady forest trees grow thickly. Pepper has great economic value. Generally speaking, the per mu output value of pepper is 2,000 to 3,000 yuan. It needs calm and tranquil surroundings. So it is relatively suitable to cultivate pepper within the eastern and southern shelter forest network where rainfall is relatively abundant. In the early 1960's, oil palm was substantially developed in Hainan Island but generally speaking it resulted in failure. However, in 1975 the Tenera variety was introduced from abroad and the 1979 per mu yield of oil palm was 230 kilograms. Tenera is expected to be developed in southern areas of the island as the "king of oils." Yet more time is needed for further experiment before it is popularized. Large-leaved tea was introduced here from Yunnan Province in the 1960's. It is mainly distributed in the southeast and central-south farms which are not suited to planting rubber. When planting tea, some farms use rubber trees as shade trees. It is better to replace rubber trees with leguminous Taiwan acacia. The reasons for this are that 1. Taiwan acacia is so strongly wind-resistant that it cannot be broken by a typhoon; 2. The root tubers of leguminous plants can fix nitrogen; 3. Grown together, rubber and tea may possibly vie with each other for fertilizers; and 4. Rubber trees on Hainan Island have powdery mildew which need to be treated with farm chemicals which can easily bring pesticide pollution to tea trees and affect export quality. Sugarcane is one of the most economically valuable crops and grows on Hainan Island all the year round. But at present its per area unit yield is too low and there is still enormous potential for increasing its output.

Hainan Island must devote herculean efforts to encourage the development of traditional tropical fruits, such as pineapples, litchis, bananas, longans and mangoes. In the eastern hilly areas with arid red soil, it is advisable to establish a production and processing base which gives priority to pineapples. It is also advisable to intercrop pineapples in rubber, coconut and betel palm plantations so as to utilize the weaknesses to foster the strong points. Hainan Island is one of the original homes of litchis. Qiongzhan County, in particular, has always been a major litchi producing area. Great efforts should be exerted to revive litchi production there. Bananas on Hainan Island can, in winter, still grow and bear fruit as usual. Apart from bananas which can be separately cultivated in places close to the villages and the "five-sides" land which have relatively favorable water resources, it is also foreseen that bananas and paddy can be rotated. Hainan Island must become a national banana exporting base. Hainan Island is one of the major mango producing areas. Mangoes can grow very well in the sandy land along the coast of the southwestern areas of the island where rainfall is scarce and the winter-spring dry season is fairly long. Hainan Island has natural conditions very favorable for growing watermelons in winter. It is also close to Hong Kong and Macao and is in a position to export watermelons in the off seasons and thus earn more foreign currency.

CSO: 4007/433

## BRIEFS

**FLOODING IN SHANTOU PREFECTURE**--Heavy rain fell in Shantou Prefecture from 28 May to 2 June. Huilai, Haifeng and Lufeng counties which are in the western coastal area have received more than 400 mm of rainfall, and Haifeng in particular received 520 mm. In other counties, some 100 to 200 mm of rainfall were recorded. Throughout the prefecture, some 400,000 mu of fields were flooded. In Huilai County where the losses caused by the disaster were serious, more than 24,000 people in 19 villages were stranded by the floodwaters, 219 houses collapsed and some 90,000 mu of ricefields were flooded. After the disaster, the Shantou Prefectural CCP Committee and the county CCP committees of the flooded areas immediately sent work teams to help settle the masses in the disaster-stricken areas, help them drain waterlogged areas, salvage flooded crops, and repair fences and breaches. [Text] [HK040645 Guangzhou Guangdong Provincial Service in Mandarin 2350 GMT 3 Jun 82]

**BEAN CROPS HARVEST**--Guangdong Province has reaped a bumper harvest of bean crops in this year's spring harvest. According to the statistics of departments concerned, this year's wheat harvest increased by 9.9 percent, the harvest of dry-land crops increased by 6 percent, and the bean harvest increased by 20 percent. In Shantou Prefecture, some 840,000 mu of wheat was cultivated last year, showing an increase of 160,000 mu over that of the preceding year. Due to improvement of management and the fact that fine seed strains have been used, the average production per mu amounted to 255 jin and the total output increased by 32 percent. In Zhanjiang Prefecture, some 280,000 mu of beans were grown last year, showing an increase of 60,000 mu over that of the preceding year. The total harvest was 32 million jin, showing an increase of 18 percent over that of the preceding year. [Guangzhou Guangdong Provincial Service in Mandarin 1000 GMT 16 May 82 HK]

**TRICHOGRAMMA RESEARCH**--Guangzhou, Jun (no day) (XINHUA)--China's achievements in using trichogramma research to eliminate other agricultural parasites won attention at the first international symposium on this subject in France, said Li Liying, vice president of the Institute of Entomology under the Guangdong Academy of Sciences, who has recently returned from the symposium. China is one of the countries which have the greatest trichogramma-using areas in the world. Since the early 1950s, it has been using trichogramma to kill the sugarcane borer, pine caterpillar, corn borer, cotton bollworm and rice grassleaf roller and has built a network for the popularization of the science. Li Liying said China has reached the world advanced level in Trichogramma culture in vitro and China's achievements in trichogramma classification, physiology and ecology were praised at the symposium. Li Liying was elected a council member of the International Committee of Trichogramma Research at the meeting at which she and Gao Yiguang, another participant from the biology department of Wuhan University reported on trichogramma research and utilization and its culture in vitro in China. The meeting also proposed that the second international symposium be held in China in 1986. [Text] [OW070750 Beijing XINHUA in English 0728 GMT 7 Jun 82]

BRIEFS

RICE CIRCULAR--Guangxi Regional People's Government issued a circular on 12 May on making early and good arrangements for late-rice production. The circular said: Stabilizing the sown area of late rice is an important condition for increasing production. After making readjustments over the past years, the sown area of late rice was reduced to 1,955 mu last year, showing a decrease of 10.5 percent over that of 1977. Besides stabilizing the cultivated area, it is also necessary to pay attention to nursing young plants and promoting sowing techniques. In conclusion, the circular said: In order to seriously implement the various policies, all areas must strengthen leadership over agricultural production and farming techniques. [Nanning Guangxi Regional Service in Mandarin 1100 GMT 14 May 82 HK]

CSO: 4007/433

# PEASANTS URGED TO GROW COTTON DESPITE DROUGHT CONDITIONS

## Bumper Harvest Planned

Shijiazhuang HEBEI RIBAO in Chinese 15 Apr 82 p 1

[Article: "Triumph Over Serious Drought for Timely Completion of Cotton Planting Tasks"]

[Text] This is a year for further readjustment of the national economy. Hebei Province has diligently put into effect a program of "positively no slackening in grain production while actively developing economic diversification," and "taking the planned economy as primary, and regulation by market mechanism as secondary to continue to readjust agricultural crop patterns." While maintaining the grain acreage virtually stable and assuring increases in grain output, an expansion in the province's cotton growing area to 11 million mu has been planned for a total output of 6.07 million dan of ginned cotton. This possesses extremely important strategic significance for making the most of the province's natural economic advantages, for increasing peasant income and national wealth, and for enlivening the agricultural economy as well as the entire national economy. All jurisdictions are to assure quality and quantity in accordance with planting plans handed down by the state, and they should not delay fulfillment of planting tasks in order to lay a foundation for winning a bumper cotton harvest this year.

A conspicuous problem confronting us in completion of this year's cotton planting tasks is the serious drought. Statistics from all prefectures show that only 5.75 million of the 11 million mu cottonfield area can be watered or maintain watering. For most of the remainder it will be necessary to combat drought by dibbling in seeds. Consequently, it is necessary to make combat against drought a key link in planting cotton. All jurisdictions should devote further attention to doing a good job of maintaining irrigation facilities and equipping pump wells, fully tap the potential of existing water conservancy facilities, use water in a planned way, conserve use of water, strive to enlarge the cottonfield area that can be irrigated, and use every available means to plant on time, and to assure a full stand of seedlings after planting.

A good job of combat against drought to plant cotton requires the further bringing into play of production responsibility systems and arousal of the



enthusiasm of the broad masses of cotton growing peasants. Those who have not yet signed contract agreements should devote strict attention to signing them. The signing of contract agreements should place under centralized control all large farm machines and implements, major water conservancy facilities and crucial planting techniques and measures that should be placed under centralized control, and contract all that should be contracted so that cotton growing peasants can devote themselves to fighting the drought and planting free from anxiety. Right now it is particularly important that responsibility systems be put in place for pump wells in order to make fullest use of the role of pump wells in fighting drought and planting. Those households that have difficulties in combating drought and planting following the practice of a responsibility system of "double contracting" [a system of fixing output quotas based on households and a system of peasant households assuming full responsibility for task completion], should be helped by production teams so that they plant sufficiently and well the cottonfields for which they have contracted.

Simultaneously with the fight against drought it is also necessary to strengthen technical guidance. Most of this year's increase in cottonfields in the province has been in Heilonggang Prefecture, where quite a few communes and brigades lack skills in growing cotton. This situation requires all the more that leadership organizations at all levels enlarge the number of agricultural technicians, go down into grassroots communes and brigades, and launch more extensive technical guidance and technical instruction work. For the province as a whole, the following several points should be given prominence in providing technical guidance for planting: First is the need for diligent summary of experiences and adaptation of general methods to local situations in setting the time for planting so that it is neither too early nor too late, so that work is begun early, so that quick action is taken at the right time, and so that vigorous efforts are made to get "seedlings in April." Second, a considerable portion of the large quantity of cotton varieties introduced from outside the province this year contain seeds with diseases, so all jurisdictions should diligently perform seed selection, sun the seeds, and treat them chemically. Third, this year's area for combat against drought and planting is large, and once planting is done, it will have to be tended at once, every row and every field being inspected. Where soil moisture conditions are good, compacting of the soil should be done to increase soil moisture. Where soil moisture is low or poor, timely action should be taken to enhance soil moisture, to promote early sprouting from the soil of cotton seedlings and full stands of cotton.

CCP committees and governments at all levels in cotton growing regions should make the fight against drought to complete cotton planting their main current task, and give diligent attention to doing it well. All old hands and less experienced hands in major cotton growing counties and communes should personally take charge. Leaders at all levels should lead large numbers of cadres into the front lines of cotton production for practical study and solution to real difficulties existing in the combat against drought to plant cotton. Where problems exist for grassroots leadership teams, energetic cadres must be dispatched at once to help solve them, and to genuinely energize the broad masses of grassroots cadres and masses of commune members.

Cotton offices at all levels should do organization and coordination work under the direct leadership of CCP committees and governments and make the most of the functional role of units concerned, to do a genuinely good job of supplying diesel oil, machine oil, rural electricity, chemical fertilizer, and pesticides, and release of down payment funds toward the purchase of cotton to assure smooth performance of the task of fighting drought to plant cotton.

#### Pointers Given on Planting

Shijiazhuang HEBEI RIBAO in Chinese 15 Apr 82 p 1

[Article: "Concentrate Forces To Triumph Over Hardships for Timely and Sufficient Cotton Planting"]

[Text] The time for cotton planting is now at hand. In order to assure both quantity and quality and fulfill the province's 11 million mu cotton sowing task on time, comrades in charge at the Provincial Cotton Office recently made the following remarks to the correspondent.

Preparations for sowing have been very good. Ninety-six percent of the province's cotton growing production teams have set up various forms of responsibility systems linking remuneration to output, and among the broad masses of cotton growing peasants desire to grow cotton is very high. The 11 million mu cotton growing task assigned the province by the state has been applied to specific fields, for most of which contracts have been signed. Preparations for the planting of cottonfields centering on the fight against drought got underway earlier than in previous years and were done more quickly. Four million mu have already been irrigated. Sufficient quantities of seeds have been made ready, and supplies of crude fertilizer, phosphate fertilizer, pesticides, and superior varieties are greater than in previous years. Additionally, training has been given all levels of leadership cadres and technicians numbering more than 2.5 million people. All this has been done by way of laying down a material foundation for prompt planting. However, this year's drought situation is particularly serious and water resources are extremely inadequate. There are numerous new cotton growing areas and planting tasks are great. Numerous cotton varieties have been introduced, so possibilities for transmitting diseases are extremely great. In addition, the work of preparing for planting has not been done evenly, and many difficulties still exist in planting. Consequently if cotton sowing tasks are to be completed so as to assure both quality and quantity, it will be necessary to make arduous efforts. Currently the following several points should be given diligent attention.

1. Use of every available means to combat drought for planting. Almost half of the dryland cottonfields in the province are dry all the way down to the plow pan, and moisture content of soil in the cultivated layer of cottonfields is 6 to 7 percent, while soil moisture requirements for sprouting and cotton seedling growth are above 14 percent. Very clearly, unless the moisture of an overwhelming majority of cottonfields is increased it will not be possible to plant them. Therefore, perseverance in resistance to drought must be

central in this year's cotton planting. Pump well maintenance must be quickly taken in hand and wells should be fully equipped so as to be able fully to tap existing water conservancy facilities, using every available means to enlarge the area that can be irrigated to provide soil moisture. Where water resources do not suffice, the method of digging high yield ditches and high yield pits has to be adopted, water pooled for use, and water use conserved. Places lacking water conservancy must devote strenuous efforts to the hauling by water on vehicles and on poles carried by people, and to combat drought by dibbling seeds. Experiences in digging large pits, irrigating sufficiently and putting numerous plants in a single hole should be promoted to assure full stands and density. In addition, special emphasis should go to conservation of moisture, to reducing moisture evaporation insofar as possible, and to achieving genuinely sufficient soil moisture for planting. On carefully leveled soil where soil moisture conditions permit, machine sowing of cottonfields should be promoted. When seeds are sown with a hand drill, a large hoe should be used to compact the soil after planting to preserve soil moisture. When soil moisture conditions are not good or where water is carried on poles for the dibbling of seeds, general methods should be adapted to local situations in the use of enclosing [0545 0545] after sowing, planting with water and enclosing, or planting in mounds. The drier the soil, the greater the need to assure planting quality, guarding against planting too deeply and smothering the seeds, or too shallowly causing them to dry out.

2. Diligent seed treatment. Emphasis should be placed on grain by grain selection of seeds, and seeds should be sunned continuously for 34 hours to increase the germination rate and to disinfect them. Before sowing, germination rate testing should be done, and the seeds should be soaked in chemicals. When seeds are planted fairly early, it is not necessary to hasten germination, but when planted fairly late, the seeds should be made to germinate slightly before planting. Particularly noteworthy is the extremely great possibility that the large quantities of Lumina No 1 cotton seeds brought in from Shandong may contain fusarium yellows disease germs. All jurisdictions should arouse a high degree of serious attention to this problem, and disinfecting should be done by either production teams or production brigades. Plant protection technique units at all levels must do a good job of teaching and giving guidance in quarantine and seed treatment techniques. In order to prevent and control diseases and insect pests, great efforts should be made to promote the soaking and mixing of seeds for sulfate delinting, and in 402, carbendaxol, furadantin, and 3911 pesticides to assure the cotton's safe growth.

3. Timely planting. Experience has shown that the best time for planting cotton in Hebei Province is during the last 10 days of April. A folk saying goes, "Around the time of the grain rains (20 April), plant cotton and beans." In general, when the soil to a depth of 5 centimeters remains at above 14 degrees, or when saline-alkaline soil remains at above 16 degrees, a concerted effort should be made to plant. In the major cotton growing areas of the south central part of the province, efforts should be made to finish sowing of cotton by the end of April. In the north, in seriously saline and alkaline cottonfields, and where combat against drought must be done, cotton



planting should also be finished by early May. In order to assure a full stand of cotton, care should be taken to grow some reserve seedlings for transplanting to spaces where seedlings do not come up. Some seeds should also be made ready for use in growing seedlings that are lacking. In addition, all jurisdictions should adapt general methods to local situations to use the new plastic mulch and seedling transplanting techniques.

4. Seed fields should be planted in sufficient quantities and well to produce seeds for next year's cotton production. All jurisdictions should set aside a seed field acreage to meet next year's cotton planting needs, and select fine variety seeds. Seed corps, specialized seed growing people or seed growing households should be designated and contracts signed for assured outputs and for a good job in sowing and tending sown fields. Disease free land should be selected for seed fields; fine varieties should be selected; and production and management conditions should be superior.

5. A good job of technical guidance. Agricultural technicians at all levels should go into the front lines of cotton production, devote attention to work in all areas by drawing upon experiences gained in key points, and disseminate planting techniques to the myriad households. At the same time, systems of responsibility linked to output for technical cadres should be perfected with all possible speed, and the role of 1,000 mu cotton growing brigades and 10,000 mu cotton growing commune demonstration sites brought into full play.

6. Leadership of cotton growing should be strengthened. Leaders at all levels in cotton growing areas should plant cotton on time in sufficient amounts and well, and devote strict attention to this as a key task in current agricultural production. Cadres at all levels should use the method of level by level dividing up of assignments, and put into effect systems of personal responsibility for leadership cadres. They should go down to the grassroots to investigate and study to solve real problems, to promote advanced experiences, to devote strict attention to the implementation of measures, to promote work in all areas by drawing on experiences in key points, and to promote cotton planting work. Technical units are to be organized to work on technical difficulties that arise in cotton planting. Supply and marketing, farm machinery, water and electricity, finance and trade departments concerned should actively coordinate and energetically help each other to do a good job of material supply, of pooling the wisdom and efforts of everyone, and in victoriously completing the task of fighting drought to plant cotton.

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CSO: 4007/393

## BRIEFS

**AGRICULTURAL DEVELOPMENT SEMINAR**--The Henan Provincial Agricultural Society, Water Conservation Society, Forestry Society and 14 other academic organizations held a seminar on speeding up agricultural development in Henan from 17 to 22 May. Some 198 people attended the seminar and 178 theses were submitted to the seminar. The seminar mainly discussed ecological improvement, exploitation and utilization of natural resources, comprehensive development of agriculture, forestry, animal husbandry, sideline production and fishery and other major issues. Han Jiangcao, secretary of the provincial CCP committee and vice governor; Cui Guanghua, vice governor; (Luo Gan), vice chairman of the Standing Committee of the provincial people's congress attended the seminar and gave speeches. [Zhengzhou Henan Provincial Service in Mandarin 1100 GMT 25 May 82 HK]

**WATER POLLUTION**--A water supply project for 20,000 people has gone into operation in (Xiaoyu) commune in Gong County in recent days. The peasants said: "The serious water pollution has been completely solved, thanks to the direct concern of chairman Hu Yaobang and party and government leaders at all levels." In recent years some 30 factories producing items such as chemicals, metals and paper have started operations in the vicinity of this commune, seriously polluting underground water. This situation was reported to the departments concerned, but was never solved. "Later, peasant representatives of the commune wrote a joint letter to Comrade Hu Yaobang. On receiving this letter, Comrade Hu Yaobang immediately issued an instruction ordering the principal responsible comrades of the Henan Provincial CCP Committee to deal with the matter personally. The leading comrades of the provincial party and government attached great importance to this. Vice Governor Yue Xiaoxia and general office secretary-general (Guo Tan) personally set to work to solve the problem. Provincial economics committee director (Li Ying) received representatives of the commune. (Li Qiaoting) and (Wang Tianzhao), leading comrades of the provincial environmental protection office, went to observe the pollution on four occasions." After consultations with all parties, the factories responsible for the pollution paid 800,000 yuan in compensation to build a water supply project for the peasants. The local factories also provided the equipment for the project. [HK070534 Zhengzhou Henan Provincial Service in Mandarin 1100 GMT 6 Jun 82]

AUTUMN GRAIN MEETING--On 3 and 4 June, the Henan Provincial Agriculture Department held an urgent meeting in Zhengzhou on the production of autumn grain. The meeting analyzed the situation of the production of autumn grain in the province, implemented the tasks of the production of autumn grain and worked out measures to strive for a bumper autumn harvest. The meeting called on people in the province to do well in the production of autumn grain. All places must eliminate the idea of attaching more importance to summer grain and less to autumn grain. In accordance with the principle of the CCP Central Committee on not relaxing the grasping of grain production and on actively carrying out diversification, all places must strive to increase the production of autumn grain. [HK100935 Zhengzhou Henan Provincial Service in Mandarin 1100 GMT 6 Jun 82 HK]

CSO: 4007/434

## HUBEI

### BRIEFS

ENTERPRISES READJUSTED--The Hubei Provincial People's Government recently approved the report of the provincial people's commune enterprise administrative bureau on readjusting the commune and brigade enterprises. The report of the provincial people's commune enterprise administrative bureau pointed out: The province's commune and brigade enterprises have been developing fast since the 3d Plenary Session of the 11th CCP Central Committee. However, management is still poor and production costs are still too high in some commune and brigade enterprises. Therefore, it is necessary to readjust the commune and brigade enterprises. The crux is to readjust the financial system, perfect the economic responsibility system and improve the economic returns. The Hubei Provincial People's Government has urged people's governments at all levels to include this task in their daily agenda and do a good job of grasping it. [Wuhan Hubei Provincial Service in Mandarin 1100 GMT 21 May 82 HK]

CSO: 4007/433

## BRIEFS

FORESTRY CONFERENCE HELD--The Hunan Provincial CCP Committee and the provincial government recently held a conference on forestry to look into the issue of how to fully exploit and utilize the mountainous land. The conference demanded that all places do well from start to finish in fixing rights of forests, fixing private forests and fixing the forestry production responsibility system, resolutely prohibit indiscriminate lumbering and protect the existing forests. Attending were responsible comrades of the provincial CCP committee, the provincial government and the provincial people's congress Standing Committee, including Wan Da, Sun Guozhi, Wang Zhiguo, Dong Zhiwen, Zhang Wenguang and Qi Shouliang; responsible comrades of all prefectures and municipalities who are in charge of forestry; and forestry bureau directors. Zhang Pinghua also attended and spoke. The conference stressed that fixing rights of forests, fixing private forests and fixing the forestry production responsibility system are a fundamental measure for developing forestry. At present, more than half the production teams throughout the province have completed this work. Around the season for crash-reaping and crash-sowing, all places must concentrate their forces on this work to ensure the completion of this work before reaping late rice. [HK010347 Changsha Hunan Provincial Service in Mandarin 2310 GMT 28 May 82 HK]

CSO: 4007/433

JIANGSU STATE FARMS SET SOME ALL TIME HIGH RECORDS

Beijing ZHONGGUO NONGKEN [STATE FARMS AND LAND RECLAMATION IN CHINA] in Chinese No 1, 1982 p 4

[Article by Propaganda Department, Jiangsu Provincial State Farm and Land Reclamation Bureau: "Every Farm and Plant in the Jiangsu Provincial State Farm and Land Reclamation System Increases Output and Profits by Relying on Policies and Science To Pick Up Speed in the Midst of Readjustment"]

[Text] In 1981 the Jiangsu State Farm and Land Reclamation System surmounted natural disasters including spring drought, autumn floods, typhoons, and rainy, overcast weather to win an all-around bumper agricultural harvest, and continued growth of industrial production. Despite a 400,000 mu reduction in the grain growing area, output totaled 400.42 million jin to exceed the bumper harvest of 1980. Ginned cotton output totaled 310,000 dan, a 40 percent increase over the previous year; and profits amounted to 60 million yuan for a net surplus of 45 million yuan, a 30 percent increase over the previous year. Total grain and cotton output, gross output value of industry and agriculture, and economic profits exceeded the all time highs. Each of the system's 32 farms and forests, and industrial transportation enterprises belonging to 14 bureaus, showed profits for an "all around victory" for the bureau as a whole. This was also an all time first for the Jiangsu State Farm and Land Reclamation System.

Last year the Jiangsu State Farm and Land Reclamation System continued to carry out a program of readjustment in which it guaranteed fulfillment and overfulfillment of grain production plans while at the same time expanding by 60,000 mu the growing of cotton and other economic crops, and actively developed economic diversification. Output value from farm operated industries and economic diversification increased by more than 20 percent over the previous year, and accounted for 60 percent of farm gross output value for an initial change in the unitary economic structure of state owned farms. In the midst of readjustment, industrial development speed reached 19 percent, and the light and textile industries accounted for 90 percent of total industrial output value. In 1981 business profits increased 46 percent over the previous year.

More than 98 percent of the company-size farming, forestry, livestock raising, and sideline occupation units in the Jiangsu State Farm and Land Reclamation



System adapted general methods to local situations to put into effect various forms of a system of production responsibility including those linking remuneration to output, and specialized contracting, with rather equitable handling of economic benefits for the state, enterprises, and individuals. They vigorously launched scientific farming, established and perfected farm science organizations at various levels, actively promoted various techniques for increasing yields, equitably arranged crop patterns, linked nurture and use of the soil, did rotational cropping, and purged alkalinity from the soil to improve it. They conducted a soil survey throughout the system's 1.13 million mu of cultivated land and its 200,000 mu of wasteland to provide accurate and reliable data for scientific farming. Taking account of different soil conditions, 410,000 mu was planted to green manure during the winter and summer of 1981; stalks and stems were returned to field on 450,000 mu, and more than 10,000 tons of phosphate fertilizer was used. Fine varieties of major crops such as wheat, barley, naked barley, paddy rice, cotton, and soybeans were put into use, and chemical herbicides and aerial spraying to control pests was done on areas totaling 550,000 mu and 500,000 mu respectively. Throughout the system, overall mechanization for crops of all kinds reached more than 70 percent, including a 94.4 percent mechanization of wheat, barley and naked barley production. This gave vigorous impetus to development of scientific farming and greatly increased labor productivity rates.

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BRIEFS

FOREST FARMS--Jiangsu Province has made rapid progress in building state forest farms. The number of farms has increased from 5 to 66, with the total forest acreage reaching 1.4 million mu and timber reserves 1.3 million cubic meters. [Nanjing Jiangsu Provincial Service in Mandarin 1100 GMT 23 May 82 OW]

FISH BREEDING BASES--Jiangsu Province has made progress in building fish breeding bases and renovating fish ponds. As of now, the province has built over 25,000 mu of new fish breeding bases and renovated 67,000 mu of fish ponds in the rural areas. [Nanjing Jiangsu Provincial Service in Mandarin 1100 GMT 25 May 82 OW]

GRAIN PRODUCTION--Xuzhou prefecture in Jiangsu has taken timely measures to promote production of autumn-harvested crops. So far, the prefecture has prepared seedlings for 3 million mu paddy rice and 2 million mu sweet potatoes and has cultivated 800,000 mu green manure. [Nanjing Jiangsu Provincial Service in Mandarin 1100 GMT 6 Jun 82 OW]

WHEAT HARVEST--Guannan County in Jiangsu has reaped a bumper harvest from its 420,000 mu wheat fields with a total output of 160 million jin, nearly 60 percent more than last year and more than 10 percent over the previous record figure. [Nanjing Jiangsu Provincial Service in Mandarin 1100 GMT 10 Jun 82 OW]

CSO: 4007/434

GENERAL UPWARD TREND IN OUTPUTS REPORTED

Beijing ZHONGGUO NONGKEN [STATE FARMS AND LAND RECLAMATION IN CHINA] in Chinese No 1, 1982 p 4

[Article: "Last Year Nei Monggol's Agricultural and Livestock Farms Had Good Yields"]

[Text] In 1981, the Nei Monggol Autonomous Region's agricultural and livestock farms brought in fairly good yields. A comparison of 1981 with the year before shows a 9.8 percent increase in grain output, a 5.9 percent increase in commodity grain, a 76.5 percent increase in edible oil output, a 4.5 percent increase in the rate of livestock increase, an 18.9 percent increase in milk output, a 5.3 percent increase in gross output value of industry and agriculture, and a 30 percent decline in net loss figures.

Reasons for the fairly good yields from Nei Monggol's agricultural and livestock farms were, first, further implementation of the party's economic policies, institution of production responsibility systems for gradual change in the situation of eating out of a "large common pot," and rather high enthusiasm on the part of the mass of staff and workers. Second was an increased level of scientific farming and scientific livestock raising. All units devoted attention to key measures of major significance for increasing yields and increasing earnings in their own area and in their own units. Most of the major farm crops on farms belonging to the Hailaer Farm Administration, for example, were sown during the period for high yields, and comprehensive measures were taken to eliminate weeds to reduce damage to the harvest, which produced a good harvest. Some agricultural and livestock farms also increased capital construction of grasslands and devoted efforts to livestock propagation and survival, thereby increasing the total rate of livestock increase. Third was continued surmounting of the single kind of farming, single kind of planting, and single kind of livestock raising mentality, with some measures being taken to develop economic diversification and to widen sources of wealth, which also won some preliminary success.

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BRIEFS

**OIL-BEARING CROPS**--Sowing of oil-bearing crops has been completed in Nei Monggol Autonomous Region. The region cultivated 7.69 million mu of oil-bearing crops, an increase of 450,000 mu--6.2 percent--over 1981. [SK052209 Hohhot Nei Monggol Regional Service in Mandarin 1100 GMT 4 Jun 82 SK]

**NEWBORN ANIMALS**--Abag Banner and Linhe County, Nei Monggol Autonomous Region, have scored remarkable achievements in delivering and protecting newborn animals. According to statistics compiled on 20 May, the banner has over 145,000 head of newborn livestock born by its some 144,000 head of female animals. The county scored a 23,000 increase in newborn livestock over the 1981 figure. The county's survival rate of newborn animals is 96 percent. It has 100,000 head of newborn livestock. [SK070635 Hohhot Nei Monggol Regional Service in Mandarin 1100 GMT 5 Jun 82 SK]

**REGION'S WHEATFIELDS**--Field management is in full swing in Nei Monggol Region. This year the region sowed 13 million mu of wheat, and all of them have come up out of the ground. Over 80 percent of wheat seedlings are second grade. The region is making preparations for wheatfield management. By the end of May, 8.13 million mu of wheatfields were hoed, 4.61 million mu were irrigated and 2.85 million mu were applied with chemical fertilizer. [SK070624 Hohhot Nei Monggol Regional Service in Mandarin 1100 GMT 6 Jun 82 SK]

**MARSH GAS PITS**--In the past few years, Nei Monggol Region has constructed over 5,000 marsh gas pits. This year the regional agricultural commission has appropriated 450,000 yuan of special funds to develop the following projects: 1) Support Xingan, Jirem, Ju Ud, Ulanqab and Ih Ju Leagues to build 3,000 marsh-gas generating pits. 2) Sponsor a regional marsh gas training class in Aohan Banner. 3) Build on trial basis a new energy resources village in a brigade in Helin County. [Hohhot Nei Monggol Regional Service in Mandarin 1100 GMT 6 Jun 82 SK]

CSO: 4007/434

## SHAANXI

### LOESSLAND WATER, SOIL CONSERVATION FARMING TECHNIQUES OUTLINED

Xi'an SHAANXI RIBAO in Chinese 16 Mar 52 p 2

[Article: "Water and Soil Conservation Farming Method. Little Investment, Quick Results, Great Increases in Yields and Easily Spread. Shaanxi Province Water Conservation Technicians Propose Adaptation of General Methods to Specific Situations for General Spread Throughout Loess Highlands"]

[Text] Editor's Note: This proposal from Comrades Guo and Zhang has great economic value and merits the serious attention of leaders at all levels in all places, particularly in the loess highland region. In addition, their spirit of initiative in fulfilling responsibility as "staff officers" for the four modernizations, and providing views as a "brain trust" merit even greater recommendation.

Recently two technicians at the Provincial Water and Soil Conservation Bureau, Guo Zhixian [6753 1807 6343] and Zhang Liming [1728 0448 6900], wrote an article proposing the adaptation of general methods to specific situations in the loess highlands for the promotion of water and soil conservation farming methods.

In the article they said that the strip fields and the trough fields in the area north of the Wei, the furrow and ridge, and horizontal furrow farming as well as intercropping, rotation of grass and field crops, and planting of swaths of grass between fields in northern Shaanxi were all a part of water and soil conservation farming methods (also called water and soil conservation farming measures). Their main advantages are: ability to reduce soil erosion, helping to conserve soil and water. Water and soil conservation farming methods can transform the minor features of slope faces and increase the slope face's roughness so that water and soil are retained in place. Horizontal ditches in mountain areas are really contour farming, the ditches and ridges intercepting runoff and reducing erosion, conserving soil, water and fertility. Experiments conducted by the Shuide and other water conservation stations under the Huang He Water Conservancy Commission show that when the slope is as small as under 20 degrees, in a situation of ordinary downpours runoff from horizontally ridged mountainlands is about 80 percent less than from smooth cultivated land, and erosion is about 90 percent less. Once a native slope has been changed into an area of ridged fields, surface water and soil erosion can be reduced by 84 to 99 percent and runoff reduced by 70 to

98 percent. In the Huang He basin of Shaanxi Province, cultivated land on slopes amounts to 35 million mu with a population of somewhat more than 16 million. Figuring on the basis of the situation in Zichang, Ganquan and Ansai counties in northern Shaanxi, where one person farms 1 mu, this region could be expanded to 16 million mu. Estimating a benefit of 10 cubic meters of runoff retention and the holding back of 4 tons of silt per mu per year, runoff would be annually reduced by 160 million cubic meters, and erosion would be reduced by 64 million tons, which is 8 percent of the amount of silt dumped into the Huang He by Shaanxi Province. Second, when water and soil conservation farming methods are used, planting can be done and benefits derived in the same year as the work is done. A look at experiments performed in some areas shows that after ridging of fields has been done on slope faces with an angle or less than 20 degrees, corn yields increased by an average of 16 to 20 percent, gaoliang yields increased by an average of 10 percent or so, and potato yields increased by an average of about 18 percent. According to a survey done at 22 production teams in 11 communes in the hill ravine area of northern Shaanxi, use of the Chuanyuan ridge and ditch planting method produced corn yield increases of more than 220 jin per mu as compared with the old planting method, i.e., a yield increase of 64 percent. Mountainland horizontal furrow planting of millet increased yields by 153 jin per mu, i.e., a yield increase of 1.4 times. Potato yields increased by 760 jin per mu, i.e., a yield increase of 80.5 percent. For other crops, including wheat, soybeans and broom corn millet, yield increases ranged from 50 to 100 jin per mu. If each person in northern Shaanxi were able to plant 1 mu and each mu produced an increased yield of 50 jin, the total increase in output would be 180 million jin. Third, the water and soil conservation farming method can save on investment and is suited to extension over wide areas. It is through the use of "indigenous" methods that the water and soil conservation farming method scores. It does not require large amounts of investment nor does it require concentration of large workforces or the use of specially manufactured farm implements. Places having the conditions can do machine farming or they can use animal power. Even in fairly distant mountain regions where work teams are small or in places practicing the linking of output to individual households or fixing output quotas on a household basis, it can be extended. It fits in with the present restructuring of the agricultural production system, and it can better put into effect various forms of rural production responsibility systems. An example was in Yan'an Municipality, which has a total of 456 production brigades. Though three-fourths of them were located in fairly out-of-the-way ravines, nevertheless, inasmuch as water conservation methods required little investment, showed quick results and resulted in high yields, they were very much welcomed by the masses and every household in every village joined in. Beginning in 1977, the method was extended for a period of 3 years, and by 1980 was being practiced on 265,000 mu, each person farming an average of 1.7 mu of land for grain output that totaled 105 million jin, in 1978 rising to 130 million jin. Fourth, the system is able to make the most of soil fertility and set up the conditions for scientific farming. Not only does it hold back mud and retain water, conserving both soil and water, but it makes fullest use of soil fertility and lends itself to all-around application of the "Eight-point Charter for Agriculture," [soil improvement, rational application of fertilizer, water conservancy, improved seed strains, rational close planting, plant protection, field management and improvement of farm implements]. This farming system creates production conditions of relatively stable fertility for crops. For example, the furrow and ridge farming method has



broken up the rigid plowpan layer, deepened the cultivated layer, improved the sponginess of the soil, created large numbers of "micro-reservoirs" for crops to help protect seedlings, help their root development, help superior varieties realize their potential for increased yields, and help make full use of natural resources, such as water, heat, light and air. In addition, this farming method can give impetus to the development of farm mechanization. For example, use in the construction of furrows in a change from hand digging of trenches to tractor-drawn single-share plows, to tractor-drawn three row furrow-digging machines; in the sowing of seeds in a change from hand sowing to use of single-legged drills and animal-drawn twin-row planting machines; in the turning over and compacting of soil in a change from shoveling and hoeing to digging and rolling machines; in cultivation from hand-hoeing and deep digging to the use of animal-powered cultivators, etc.

Finally the article said that the loess highland area of Shaanxi Province that has yet to be brought under control is very great, and it will not be possible in the short term to carry out high speed capital construction of a substantial amount of farmland. In this situation, water and soil conservation farming methods have a lot of room for application. Therefore, they proposed the adaptation of general methods to local situations for the promotion of water and soil conservation farming methods in the loess highlands.

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CSO: 4007/387

## SHAANXI

### MORE EFFECTIVE LAND UTILIZATION IN NORTHERN SHAANXI REPORTED

Xi'an SHAANXI RIBAO in Chinese 16 Mar 82 pp 1, 3

[Article originally printed in NONGCUN GONGZUO TONGXIN [RURAL WORK BULLETIN]:  
"Carry Forward the Yan'an Spirit for Better Building of North Shaanxi Old Liberated Areas"]

[Excerpts] Yan'an and the Shaanxi-Gansu-Ningxia border area used to be the location of the CCP Central Committee and the main base of the Chinese people's liberation struggle. The great contribution that this area made to the Chinese revolution is world-renowned. The economic poverty and backwardness of this region is also a matter of general knowledge to all. How is the building of the old north Shaanxi liberated areas going today? How are the people of north Shaanxi living? These are matters about which the people of the entire country, and particularly old comrades who have lived and fought in north Shaanxi, are extremely concerned. The reply of the people of north Shaanxi to these questions is as follows: Since the 3rd Plenary Session [of the 11th Party Central Committee], as a result of the "correct line, suitable policies, and the people pulling together," and as a result of further improvements made in agricultural production conditions on a foundation of former construction done over a long period of time, agricultural production has won all-around bumper harvests for 3 consecutive years.

The Third Plenary Session was a great historical turn in the course of events. Beginning in 1979 agricultural production had three consecutive bumper harvests in northern Shaanxi's old liberated areas despite natural disasters, including drought, floods, insect pests and hailstones. In Yan'an Prefecture, 1979's grain output totaled 916 million jin, a 7.7 percent increase over 1978; in 1980, it was 1,406,000,000 jin, a 14.2 percent increase over 1979; and in 1981 summer grain output totaled 170 million jin, an 18 percent increase over 1979. Despite reduced output in the fall resulting from disasters, output for the year as a whole still totaled 950 million jin. In Yulin Prefecture, the 1979 grain output totaled 1,317,000,000 jin, a 7.13 percent increase over 1978. In 1980, despite the effects of natural disasters, output still totaled 1,233,000,000 jin. In 1981, output totaled 1.35 billion jin, an all-time high. Average amount of grain per capita was 800 jin in Yan'an Prefecture, and more than 700 jin in Yulin Prefecture. A considerable number of communes and brigades realized a "farming of three and a surplus of one." The masses eagerly sold their surplus grain to the state. In Yan'an Prefecture alone, last year households making sales of 10,000 jin in excess

of quotas numbered 60. All-around development also occurred in forestry, livestock raising, and sideline occupations. Commune member economic income increased many times over. In Yan'an Prefecture, commune member per capita income averaged only 50 or 60 yuan in 1978, but amounted to 165 yuan in 1981. Some 100,000 peasant households repaid debts of many years standing. Since 1979, Yulin Prefecture commune member per capita income has averaged annual incremental increases of 35 percent, amounting to 150 yuan in 1981. The amount of rural savings deposits has increased each year, and the purchasing power of the masses has greatly increased.

How has it been possible for such large changes to have taken place within the short space of 3 years in the old liberated areas of Shaanxi Province?

First of all, the line, programs and policies in the wake of the Third Plenary Session have been a decisive factor. In addition, implementation of the 16 articles for liberalization of rural policies promulgated by the Shaanxi Provincial CCP Committee encouraged and supported commune members in the broadening of production avenues, development of the planting and aquatic products breeding industries, the plaiting industry, and such collective economically diversified and household sideline industries. Expansion of private plots and allocation of private firewood mountains, private forests and grasslands and deserts stimulated country market trade and enlivened the rural economy. The fairly early and fairly rapid development of agricultural production responsibility systems suited to local circumstances was particularly responsible for overcoming the bad practice of "eating out of a large common pot" that had long existed, and of directly linking the peasants' labor to the amount of compensation they should receive, thereby actively arousing enthusiasm for both collective operations by production teams and free operations by individual commune members. It revived and carried forward the Yan'an spirit of self-reliance and arduous struggle, and vigorously promoted development of a build-up of production.

Second was a program for the building of agricultural production suited to actual conditions prevailing in northern Shaanxi. In 1979, the Shaanxi Provincial CCP Committee summarized both positive and negative experiences to formulate a program for the building of agricultural production in northern Shaanxi, which was "simultaneous development of farming, forestry, and livestock raising, gradual changing of widespread farming for scant harvests to reduced farming for high yields and greater harvests; and while striving to realize self-sufficiency with some surplus in grain, to gradually build forestry and livestock industry bases."

In the change from sole emphasis on grain production to simultaneous development of farming, forestry and livestock raising, and in the change from widespread farming for scant harvests to reduced farming for high yields and greater harvests, during the past 3 years an area of more than 5.9 million mu has been newly forested, and more than 4 million mu of grasslands planted. This has gradually readjusted the proportional relationships within agriculture so that farming, forestry and livestock raising are organically linked, each playing its own role, one advancing the other to provide a definite foundation for restoring the ecological balance and assuring all-around development of farming, forestry and the livestock industry.

Third is active launching of agricultural science and technology work. Everywhere in northern Shaanxi, party and government leaders have assiduously put into effect the party's policies for intellectuals, and have intensified establishment of agricultural science and technology organizations and technical training work. They have readjusted crop patterns, adapting general methods to local situations to increase the proportions of broom corn millet, wheat, rice and pulse crops. They have bred and extended to cultivation fine varieties of hybrid corn, potatoes, millet and gaoliang; and they have reformed backward farming systems and growing methods. They have taken account of the aridity and low soil fertility that characterize northern Shaanxi to summarize and promote horizontal furrow planting methods; and ridge and furrow planting methods on riverlands, plains and flatlands; riverland wetland intercropping methods; and dryland plains area oil-bearing crops, pulses and grass fertile field methods. In places practicing the aforementioned "four methods" of farming fields, average yields per mu increased by between 50 and 150 percent over the customary former cultivation methods. In Yulin Prefecture, promotion of seedling propagation and transplanting techniques using plastic sheeting doubled average yields per mu as compared with the direct sowing of rice. In the leveling of fields for afforestation, aerial sowing for afforestation and the planting of grass, the mechanization of plant protection, and the introduction and propagation of superior varieties of domestic livestock and poultry as well, remarkable results were obtained. The introduction of fine-wool sheep, in particular, opened a new set of circumstances for the livestock industry of northern Shaanxi.

Fourth was fairly equitable use of special funds for the building of old liberated areas. Since 1979, we have applied the special funds that the Central Committee has annually allocated for construction of old liberated areas in northern Shaanxi mostly to support poor communes and brigades in changing basic agricultural production conditions, and in improving the livelihood of the masses. Management methods have also been formulated, and management organizations have been set up or specific persons assigned responsibility to assure that the special funds are used for special purposes. At the same time, state support has been combined with carrying forward the spirit of self-reliance to encourage common development by collectives and individuals; engineering methods have been combined with biological measures, the special funds for the construction of northern Shaanxi thereby playing an important role in changing poverty and hardship. During the past 3 years, both Yan'an and Yulin prefectures have done 600,000 mu of new capital construction of farmland, restructured and upgraded 500,000 mu, built 23 new reservoirs, 110 irrigation ditches and 805 pumping stations. Yan'an and Yulin prefectures plus Chunhua, Dianyì and Lin counties have erected 2,700 kilometers of electric power lines to solve problems in the use of electricity for five counties that had been without electricity. The electrically irrigated area has been increased by 170,000 mu.

The land area in use in the old liberated areas of Shaanxi Province amounts to 110 million mu, an average of 26 mu per capita. Land presently used for farming, for forests, and for grasslands amounts to one-half the land area in use.

In the future, the task of building production in northern Shaanxi must follow the principles of both providing the masses with sufficient clothing and food and carrying out modernized economic and cultural development, both promoting steady increases in agricultural production and gradually raising the standard of living of the masses, both broadening avenues of production, increasing collecting accumulations and commune members' economic income, and increasing and expanding reproduction capacity with the building of forestry and livestock industry bases with all possible speed while correspondingly developing industrial production.

We plan, first of all, to achieve the "1, 9, 8, 5" struggle objectives that Comrade Hu Yaobang has proposed to the people of Shaanxi. This means the realization by 1985 or a little longer of 1 large livestock animal, 9 mu of forests or grassland, 800 jin of grain and 5 sheep or goats per capita.

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CSO: 4007/387



## TECHNIQUE FOR INCREASING SINGLE-CROP COTTON PRODUCTION

Jinan DAZHONG RIBAO in Chinese 2 Apr 82 p 2

[Article by Shandong Academy of Agriculture: "The Cultivation of Seedlings in Nursery Pots Is the Key Technique for Increasing Single-crop Cotton Production"]

[Text] The technique of cultivating cotton seedlings in nursery pots is a key technique to increase the single-crop cotton production and the quality of the fiber. Whether in coastal and the cotton producing eastern part of the province where the frost-free period is relatively short and where early spring temperature warms up slowly, or in the cotton producing areas in the southwestern part of the province where the frost-free period is relatively long and warm temperatures return rather early in spring, whether the soil is rich in saline-alkali or whether it is clayey ground or sandy and loam, the adoption of this technique has resulted in increased cotton production, early maturity and better quality. This phenomenon of increased production and early maturity is particularly noticeable in clayey soil, and sandy loam and massif areas where cotton seedlings emerge late. However, this technique for increasing cotton production had not been widely adopted for a long period of time. It was not until the 3d Plenary Session of the 11th Party Central Committee when the enthusiasm of the cotton farmers to learn and to adopt scientific methods was unprecedentedly raised that the technique of cultivating seedlings in nursery pots achieved greater development. In 1981, cotton fields that have adopted the method of cultivating and transplanting potted seedlings reached 1.2 million mu throughout the province and cotton production generally increased by 20 percent. The economic benefit of transplanting cotton was also higher than that of cotton directly planted onto the field. It is, therefore, of paramount importance to promote the technique of cultivating potted seedlings in nurseries so as to achieve bumper cotton harvest to meet the need to stabilize the acreage of cotton fields and to increase single-crop as well as the total cotton output.

Why is the technique of cultivating seedlings in nurseries and transplanting them a key to increasing single-crop production? The chief reasons are as follows:

- (1) The growth of cotton is not limited to fixed periods. However, due to the brief frost-free period in the cotton producing areas in our province, the flowering period for cotton planted directly onto the field usually begins around 15 July and lasts for only about 60 days. This puts a limit on the



amount of cotton production. As for transplanted cotton seedlings, the earlier they are planted, the sooner they emerge. Generally, the flowering period, which comes at the end of June and early July, may be extended for about 10 days so that the number of early cotton bolls and the total number of cotton bolls per plant is dramatically increased, usually by about 15 percent before frost sets in. At this time, because a large portion of the cotton bolls in our province grows during the period when temperature, humidity and light illumination are most suitable for cotton growth and cultivation, the weight of the cotton bolls is in general heavier (an increase of about 0.15 gram per boll), the fiber matures well and the quality better.

(2) Cultivation of cotton seedlings in nursery pots also ensures even emergence of seedlings. Usually the low temperatures and dry weather in the spring in the cotton producing areas in our province, cause a rather large portion of the seedlings directly planted onto the field to emerge unevenly, especially on clayey soil and soil that is rich in saline-alkali where there is a predominant absence and uneven growth of cotton seedlings. This irregular degree of growth affects the yield of cotton production. By cultivating seedlings in nursery pots before transplanting them, it is possible to ensure their healthy growth because the pot soil is rich in nutrient, and the seedbed provides adequate temperature and moisture. Besides, at the time of transplanting, one can weed out the weak and unhealthy seedlings, enabling a healthy and even growth of the seedlings. By the time these seedlings are transplanted, the stems are already ligninized, more alkali tolerant and adverse effect resistant, sustaining a higher rate of survival, and ensuring an even growth of the entire shoots and cotton seedling. Furthermore, at the time of transplant, these seedlings can be easily planted in equal distance thereby ensuring a balanced nutritive area per plant, which is conducive to an even growth of each plant in between individual spaces. This also helps achieve a balanced increase in production.

(3) The technique of transplanting potted seedlings ensures strong shoots and steady growth. The breaking of the tap root at the time of transplant stimulates the growth of lateral roots, increases the number of roots in the cultivated layer, strengthens the plant's ability to absorb nutrients, thus promoting a healthy growth of the cotton plants. Furthermore, the transplanting of pot-cultivated seedlings can be transplanted earlier than the direct sowing, moving ahead the growing period by about 15 days. The earlier germination of the seedlings and the relatively low temperature prevailing in the early stage of development ensures their steady and healthy growth. Experiments bear out the fact that the height of the first fruiting branch of transplanted cotton plants is generally more than one centimeter lower than that of cotton plants directly planted onto the field. The length of the main stem is reduced by about half a centimeter in average while the height of the plant is reduced by about 5 centimeters presenting a more compact shape. In general, those cotton plants in our province that are transplanted from seedlings before the arrival of the rainy season yield more bolls per plant than those directly planted onto the field. Because of the even distribution of nutrition in the cotton plant, the amount of nutrition that reaches the reproductive organ is correspondingly larger than the amount that goes to the growing point of the plant, thereby restraining the plant's excessive growth, which easily happens in a season when both rain and heat occur simultaneously. By postponing the chance of excessive growth from happening, and by increasing the level of

photosynthesis, the shedding of cotton squares and bolls would be reduced, thus increasing the budding in the middle and lower parts of the cotton plant.

Experiences in the transplanting of potted seedlings dictate that we should have a firm grasp of the following questions in techniques:

(1) Quality of nursery pots and proper management of seedbeds. The potting soil must be rich to promote the healthy growth of the seedlings. Generally, mellow soil, mixed with 20 percent of quality decomposed barnyard manure should be used. The pots should be of the proper size. If the pots are too large, the usage rate of seedbed is reduced. If they are too small, the seedlings would not grow well. As a rule, the pots should be 6 centimeters in diameter and between 8 to 10 centimeters in height. The most important requirement in the management of seedbeds is to maintain a proper temperature. Before potting, the seedbeds should be well watered. The seeds should be carefully selected and soaked. The film for mulching should not be removed from the time the seeds are planted to the time when they begin to sprout. The seedbeds should be kept at a moderately high temperature to promote sprouting. After sprouting, care should be taken to remove the film and to cull the seedlings. The temperature of the seedbeds should be maintained at about 25°C.

(2) Superior transplanting methods. Superior methods of transplanting seedlings shortens the period of their controlled growth, a key to ensuring healthy growth, early maturation and high yield. Proper transplanting requires first, that it be undertaken at the proper time. Generally, it is around the end of April when the temperature is between 17 and 18°C steady. Second, transplanting requires delicate and careful handling that damage to the roots can be reduced to the minimum. Large and small seedlings should be separately transplanted. The seedlings should be planted at a proper depth, because if it is too deep, the temperature of the soil would be too low while if it is too shallow the pots would easily dry up hindering the sprouting. Third, thoroughly water the "settling water" to completely wet the potting soil so that it could be well mixed in with the soil in the large field later. However, if it is too early to transplant, overwatering would lower the temperature of the soil and prolong the time to revive the seedlings. Fourth, focusing on fertilization. Before transplanting, bacterial manure or chemical fertilizers may be applied to promote sprouting. Fifth, the soil should be loosened between the plants and between the rows of plants to raise the temperature of the soil.

(3) Strengthening post-transplanting management. Cotton plants transplanted from nursery pots develop earlier and have shallower roots, are more susceptible to lodging and premature wilting. For this reason, advance attention must be paid to transplanted, as opposed to directly planted cotton plants, especially during the intermediate growing period. During this intermediate cropping period, fertilizer and water must be properly controlled to prevent premature wilting. The work of preparing the soil and drainage must be done in advance to prevent lodging and rotting. The rotted bolls must be culled and disposed of promptly.

SHANDONG

BRIEFS

CORN BORER PEST--This year a large number of corn borers will probably emerge in Shandong Province. Various localities should quickly adopt prevention measures to ensure the safety of cornfields. Since the temperatures in the past winter-spring period were higher, there are 30 to 50 percent more corn borers in the province than usual. [SK040732 Jinan Shandong Provincial Service in Mandarin 2300 GMT 3 Jun 82 SK]

CSO: 4007/433

SHANGHAI

BRIEFS

SUMMER AGRICULTURAL PRODUCTION--Summer agricultural production is in full swing in Shanghai's suburban areas. By 21 May, more than 470,000 mu of barley has been harvested and 250,000 mu of early rice and 200,000 mu of cotton transplanted. Field management for the remaining 500,000 mu of cotton has been intensified. [Shanghai City Service in Mandarin 1130 GMT 22 May 82 OW]

CSO: 4007/433

## SHANXI

### DRYLAND FARMING TECHNIQUES PROPOSED

Taiyuan SHANXI RIBAO in Chinese 5 Feb 82 p 1

[Article by Liu Bosheng [0491 0130 3932]: "Need for North China Region to Take Organic Dryland Crop Route. Zhang Qinwen [1728 3084 2429] Makes This New Proposal, Which Receives Serious Attention of Provincial and National Units Concerned"]

[Text] In North China, and particularly in a place like Shanxi in which "9 out of 10 years are dry," as a strategic matter, what should be the main focus of attention in development of agricultural production? For a long time people have generally believed the focus should be on water to combat drought. A scientist in the province, Comrade Zhang Qinwen, has put forward a different proposal. In an academic treatise published in 1981, "Organic Dryland Crops Agricultural Strategy," he pointed out that the technical strategy for development of agriculture in the northern regions of China at the present stage must be an organic dryland crop agricultural strategy.

The so-called organic dryland crop agricultural strategy means that in areas in which development of water conservancy is currently difficult, there should be leveling of the soil to conserve water and soil, and increased fertilization with organic fertilizer, paired with a series of farming methods to combat drought for the building of a farming system that interrelates use and nurture of the land, rather than insistence on an agricultural strategy that employs expensive irrigation. His goal is to build an equitable and highly efficient ecological system and to preserve an orderly material cycle and energy exchange in the agricultural production process, the land thereby becoming more fertile the more it is farmed to increase yields per unit of area.

Comrade Zhang Qinwen is a researcher in the Rural Economy Agricultural Systems Engineering Research Office of the Provincial Agricultural Zoning Commission, and he has worked for more than 20 years on forestry and agriculture in Youyu County. In the process of long work experience and investigation and study, he has accumulated a large amount of data, and he deeply feels that a large number of units do not attach sufficiently serious importance to soil improvement and build-up of soil fertility. Capital construction of farmland frequently emphasizes only changes in form and ignores improvements of an essential kind of a build-up of soil fertility. Attention goes only to the building of water conservancy projects and

emphasis on water to irrigate the land to the neglect of fundamental improvements in the structural properties of the soil and the adoption of farming practices to combat drought. A large body of facts demonstrates that impoverished soil is one of the main reasons for the low yields and backwardness of agriculture, and for the frequency of natural disasters in northern regions of China. Hopes that reliance on construction of water conservancy can fundamentally solve drought problems are currently difficult to realize. When water is available, emphasis should naturally be placed on water, but when the "water route" is not open, it is necessary to take the "dry road," i.e., to adopt the strategy of organic dryland crop agriculture, taking the road of improving the soil and using the soil to store water.

Following publication of Comrade Zhang Qinwen's thesis, "Organic Dryland Crops Agricultural Strategy," not only did it receive the serious attention of leadership comrades in units concerned in Shanxi Province, but it also received the serious attention of units concerned and leadership comrades in the central government and in some provinces. Publications or reference materials published by the State Agricultural Commission, the National Agricultural Zoning Commission, the Agricultural Modernization Research Committee of the Chinese Academy of Agricultural Sciences, the Chinese Agricultural Economics Society and the Agricultural Economics Institute of the Chinese Academy of Social Sciences all either published in full or excerpted for publication Comrade Zhang Qinwen's treatise.

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CSO: 4007/256



ADMINISTRATIVE METHODS FOR ENHANCING FARM MACHINE EFFECTIVENESS EXPLORED

Taiyuan SHANXI RIBAO in Chinese 1 Feb 82 p 2

[Article by Pin Zeng [0756 1073] and Li Hua [2621 5478]: "Good Farm Machinery Management to Promote Agricultural Development. Province's Farm Machinery System Enhances and Improves System of Responsibility for Farm Machinery in Four Ways"]

[Text] In order to assure new advances this year in farm machinery work, the broad masses of cadres and workers in Shanxi Province's farm machinery system have actively mobilized to enhance and perfect the system of responsibility for farm machinery in four ways.

The provincial conference for exchanges of experiences on the system of responsibility for farm machinery management and production convened in early December 1981 gave very great impetus to the farm machinery front. In the process of reflecting on and summarizing the year's work, the broad masses of farm machinery workers experiences a keen sense of the need to enhance and improve systems of responsibility for farm machinery and production in a new situation. They studied and discussed the spirit of the Provincial Farm Machinery Conference, and focused, in a planned and goal-oriented way, on the weak links in practice of systems of responsibility for production to make gradual improvements in them.

First was strengthening of leadership and heightening of perceptions. Leadership comrades in farm machinery units in Pu County and in Zuoyun and Youyu counties led work teams of varying numbers of people into the countryside where they conducted typical case indoctrination to solve problems in perception. They used the mental reservations on the part of some communes and brigades during the past year that have resulted in fears that collectives would fail while individuals would prosper, bringing about destruction of farm implements, which hurt farming. From the year-end honoring of contracts, they learned lessons of experience for deciding on this year's system of responsibility.

Second was tailored guidance. Acting on requirements from the Provincial Farm Machinery Bureau, farm machinery management units at all levels in Xin County worked out specific criteria for selection of forms of a system of responsibility in specific situations, which were explained and publicized at the grassroots

level. Comrades in charge of farm machinery units in Pingding, Xiyang and Heshun counties also went from village to village in the company of farm machinery management personnel from communes to give briefings on various forms and characteristics of systems of responsibility for farm machinery, and to give tailored guidance.

Third was signing of equitable contracts. In view of problems that cropped up in 1981 in the practice of systems of responsibility, when contracts were signed this year, in some places both parties discussed in detail, article by article and amount of money by amount of money, the specific content of "contracting production or work quotas, fixing amounts and giving rewards" regarding amounts, how to assure farmland operations, launching of economic diversification, how to maintain farm implements in good mechanical condition, and how various kinds of accidents were to be handled. They reached agreement on these matters, making the work of reducing or avoiding disputes that might arise a priority matter.

Fourth, farm machinery companies at all levels, and county farm machinery repair units, as well as farm machinery institutes, technical promotion units, safety control units and training units, all began to study measures to expand the scope of vocational activities, to streamline organizations, and to increase efficiency, as well as to solve the problem of personnel in excess of needs. In addition was diligent implementation of the unit's work criteria, seeking to find good ways to closely combine the welfare of staff and workers with the welfare of the collective. The broad masses of staff and workers said happily that coming to grips with the major matter of systems of responsibility at the beginning of a new [lunar] new year was a fine start.

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CSO: 4007/256

## SICHUAN

### BRIEFS

RECORD SICHUAN PIG PRODUCTION--Although Sichuan Province suffered from disastrous floods last year, the province's pig production and sales broke four of the highest records in history. According to the Sichuan Provincial Statistical Bureau, the province marketed 32 million pigs last year, the state purchased 19.3 million pigs. Both figures topped those of the peak year, 1980. Last year the province's urban inhabitants consumed an average of 56.1 jin of pork per person, 0.9 jin less than the year before. But the province's 80 million peasants consumed an average of 22.7 jin of pork per person last year, compared with 22.1 jin the previous year. The average consumption of pork for the entire population of the province, both urban and rural, was 26.8 jin per person last year, an increase of 0.3 jin over the previous year. [Text] [Shanghai JIEFANG RIBAO in Chinese 21 Jan 82 p 3] 9924

CSO: 4007/277

STATUS REPORT ON XINJIANG RECLAMATION SYSTEM PROVIDED

Beijing ZHONGGUO NONGKEN [STATE FARMS AND LAND RECLAMATION IN CHINA] in Chinese No 1, 1982 p 5

[Article: "Xinjiang Production and Construction Army Wins New Victories in All Around Bumper Harvest and in Turning Losses Into Profits"]

[Text] On New Year's eve 1982, the Xinjiang production and construction army located in the northwestern reaches of the motherland transmitted the inspiring news of victory in winning an all around bumper harvest and in turning losses into profits.

Thanks to the efforts of the reclamation area's broad masses of cadres and employees, the reclamation area triumphed over natural disasters of drought and hailstorms in 1981 to win a bumper harvest of rare proportions. Despite a 600,000 mu cut in the previous year's grain growing area, output increased by 3 percent over the bumper previous year and is expected to reach 1.9 billion jin. The cotton growing area increased by 300,000 mu and cotton yields per unit of area increased as well, to produce a ginned cotton output totaling 1 million dan, a 43 percent increase over the previous year. Fairly great increases also took place in output of oil-bearing crops, output totaling 900,000 dan, a 12.5 percent increase over the previous year. Hops output totaled more than 4,000 tons, a 1.5 fold increase over the previous year. Both the number of livestock in inventory, and the output and output value of various livestock products increased over the previous year. Gross output value of industry reached 770 million yuan, an 8.4 percent increase over the previous year. Of the 28 different major industrial goods included in the state plan, 21 either fulfilled or overfulfilled plan, and output value of 9 industrial products that use farm or livestock products as raw materials increased by more than 30 percent over last year. Results foretell a turning of losses into profits for the army as a whole for removal of the stigma of more than 10 consecutive years of losses.

Since the Third Plenary Session of the 11th Party Central Committee, the Xinjiang Reclamation Area has conscientiously put into effect the CCP Central Committee's programs and policies and has taken three great strides in 3 years to bring about major changes very rapidly in the reclamation area. In 1981 in implementing the programs and policies of the CCP Central Committee, they devoted attention mostly to the following several tasks.

First was to carry out programs for readjustment of the national economy with vigorous readjustment of the industrial structure. They took vigorous action to increase yields per unit of area and assure total output, suitably cutting back the grain crop growing area while increasing the growing area for various economic crops of high economic value, earnings from agricultural production thereby increasing tremendously. From the 300,000 mu increase in the cotton growing area alone, total earnings from agricultural production increased by more than 15 million yuan.

Second, they revived and developed integrated agricultural, industrial, and commercial operations and economic collectives. The army had formerly instituted integrated industrial, agricultural, and commercial operations for great increases in economic results. During the past several years they strove to overcome the damage caused by the 10-year period of turmoil, adapted general methods to local situations for development of industrial production, and followed a course of integrated agricultural, industrial, and commercial operations. In 1981, their profits from industry and transportation alone amounted to more than 55 million yuan.

Third, they promoted various forms of production responsibility systems. In 1979, they began to institute a system of sole responsibility for finances on farms, and a system of "three fixeds and one reward" for company-size units. In 1980 they tried out accounting by companies, fixing output quotas based on groups, and placing responsibility on specific people, and in 1981 numerous regimental farms and company-size units acted under unified administration in the further promotion of the fixing of output quotas based on groups and the linking of the calculation of rewards and penalties to output. Some promoted various forms of linking professional wages and variable wages to link fairly closely together employees earnings and the fruits of labor to arouse enthusiasm among employees.

Fourth, they did a solid job of promoting new scientific techniques. They instituted reasonably close planting of all crops, and increased by more than 10 percent the number of wheat and cotton plants in a full stand. All regimental farms improved fertilizing methods, each of them using a layer-by-layer deep application method. They extended use of the new technique of plastic mulching of cotton over more than 20,000 mu for ginned cotton yields of more than 190 jin per mu, an output increase of 30 to 50 percent.

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CSO: 4007/396

## YUNNAN

### GREATLY INCREASED SOYBEAN PRODUCTION URGED

Kunming YUNNAN RIBAO in Chinese 18 Mar 82 p 1

[Article: "Great Production of Soybeans"]

[Text] Great production of soybeans, white kidney beans and miscellaneous other pulses, striving for fairly tremendous increase this year in production of pulses, is an important task in spring-sown grain and pulse production, and is also a major matter in the development of economic diversification. The method proposed by Zhaotong County following analysis of the county's historical soybean production situation and present difficulties of the masses in getting products to eat made of soybeans is a good one in that it requires efforts to achieve manifold increases in soybean output this year and to take action on the basis of these increased production figures. Great production of soybeans now required just such determination and just such action!

Soybeans are a necessity in the lives of both city and country people. As people's livelihoods improve, mass requirements for soybean products steadily increase. However, in many places soybean output has not been restored to its all-time high. In many places the difficulties that city and country people experience in getting soybean products to eat are a long way from a solution. The famous Zhaotong soy sauce is hard to buy, and the famous Shibing dried beancurd, Lu'nan beancurd in thick gravy, Yuqi fried beancurd in thick gravy, Yimen fermented green soybeans and Kunming Taihe fermented soybeans are all hard to buy. Great production of soybeans has already become a major matter bearing on the livelihood of the masses. Advantages in developing soybeans are numerous as well. Given the fairly high procurement price paid for soybeans, peasant income will be increased. Root nodule bacteria on soybeans, which can fix nitrogen, can increase soil fertility to promote growth of other crops and lower production costs. When large quantities of soybeans are available, they can provide large amounts of raw materials to state and collectively-owned units for food processing, increasing state and collective income. For the state, the collective, and individual peasants, large-scale production of soybeans is necessary.

Yunnan Province has conditions favoring development of soybean production. Most of the province's more than 20 million mu of drylands can be used for the intercropping of soybeans or for planting them as a single crop. However, as a result of the reduction that has taken place during the past several years in the area



on which soybeans are planted as a single crop, plus some improper farming methods, intercropping and interplanting of soybeans has been impaired. Now conditions exist for expansion of the area on which soybeans are grown as a single crop, as well as to take commensurate action to increase the quantity of intercropping and interplanting of soybeans. Still another important situation is that the broad masses of peasants in most areas are accustomed to and experienced in the growing of soybeans, and are currently enthusiastic about growing more and better soybeans. The key lies in leaders devoting serious attention to this problem and genuinely taking soybean production in hand as a major matter for increasing peasant income, developing economic diversification, and improving the livelihood of the masses, making plans, and, like Zhaotong County, taking several genuinely effective vigorous actions for gradual implementation echelon by echelon and unit by unit. These actions include the formulation of plans, designation of areas for the growing of soybeans as a single crop, for intercropping, and on earth embankments between fields, establishment of responsibility systems, the signing of procurement contracts between grain units and production teams and commune members, helping with the hauling of seeds, extension of advanced techniques, etc.

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CSO: 4007/381

## LINFEN PREFECTURE SPEEDS UP SUGAR CANE PRODUCTION

Kunming YUNNAN RIBAO in Chinese 1 Apr 82 p 2

[Article by Yang Yiji [2799 3558 1015]: "Linfen Prefecture Accelerates the Rate of Sugar Cane Production"]

[Text] In 1981, Linfen Prefecture achieved the highest record in sugar cane production in history. Sugar cane output for 1981 came to 152,000 tons, or a 36.4 percent increase over 1980 while sugar production reached 12,000 tons, or a 29 percent increase over 1980. Summarizing their experience in increasing sugar cane production, those in leadership positions in the party and the government in Linfen Prefecture have gone one step further to strengthen their leadership, increase single-crop sugar cane production and adequately enlarge the production area so as to win a still greater development in sugar cane production.

Linfen Prefecture holds a favorable position in sugar cane production. There are 8 counties, 79 communes (townships), over 500 production brigades and 10 state-operated farms in Linfen Prefecture, all of which are well suited to planting sugar cane. During the past year, those in leadership positions in the party and the government, in an all-out effort to implement the guiding principle of "absolutely not relaxing efforts in grain production and to develop diversified economy in a positive manner," took full advantage of the favorable natural local conditions in making sugar cane a mainstay production. First, in areas suitable for sugar cane cultivation and acting on the principle of "adopting methods suitable for local conditions, exercising a proper degree of centralization, coordinating planning and selecting the proper projects for development," they readjusted the distribution of crops and increased the acreage for sugar cane cultivation to some 54,400 mu, or 8.7 percent over the figure for the previous year. In order to resolve the conflict between grain and sugar cane production, the amount of agricultural tax in kind should be adjusted and reduced in sugar cane producing areas, the policy of "establishing a link between sugar cane and grain production, setting up base figures and offering bonuses for production in excess of the production quota" should be thoroughly carried out and the positive attitude of commune members to develop sugar cane enterprises so that the size of the producing areas may be stabilized, should be mobilized, making these producing areas reliable sugar cane production bases. Assistance should also be provided to the 1,300 plus sugar cane production brigades to set up various forms

of the production responsibility system to suit their actual conditions. A bonus system should be set up to motivate the positive attitude of the cadres, technical personnel and the sugar cane production supervisors of the communes and brigades so that they may unite as one in the development of sugar cane production.

Over a number of years, sugar cane production in Linfen Prefecture has been characterized by low productivity, poor management, a lack of variety and low single-crop production and yield. During the past year, while the acreage for sugar cane production was being expanded, efforts were made to increase single-crop production. The agricultural departments and sugar mills in the various counties assigned a number of technical cadres to conduct on-the-spot conferences to train sugar cane production supervisors and to conduct high yield model plots to assist commune members to achieve higher standards in scientific production of sugar cane. There are in total 2,300 mu of high yield model sugar cane fields throughout the prefecture. Improvement was made on cultivation methods. Summer, autumn and winter sugar cane production was extended by 400, 1,400 and 1,200 mu respectively. The conflict arising from the competition for labor, water and the planting seasons between sugar cane and grain production was thus considerably eased. Furthermore, efforts were made to popularize improved varieties, raise the quality and quantity of the crop, intertill and prepare the soil at the proper time, increase the application of fertilizers, strengthen management and prevent and control insect diseases. Thanks to the early arrival of and even spring rainfall last year, sugar cane growth was thriving throughout the prefecture. The single crop per unit yield throughout the prefecture came to 2.87 tons, or a 14.7 percent increase over the figure for the previous year. Furthermore, a number of high yield model plots produced single crops of more than 10 tons per unit.

At the present time, sugar cane farmers in various areas are elated over the bumper harvests and are busily engaged in the peak season for the felling, transporting and pressing of sugar cane. During the first part of March, throughout the prefecture, 29,400 tons of sugar cane has been pressed and 6,900 tons of sugar has been produced. While close attention is being paid to the felling of sugar cane, the various areas are also summarizing their experience in achieving increased production, planning sugar cane production for this year and grasping spring sugar cane crop in time in order to win a still greater bumper harvest of sugar cane. The communes and brigades have pledged to direct their efforts toward increasing the single crop high yield of sugar cane, expanding sugar cane cultivation area; up to 60,000 mu for this year is in the plan, including 20,000 mu for the spring sugar cane crop. According to incomplete statistics, some 7,000 mu had already been planted by March 10.

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CSO: 4007/379

YUNNAN

LIVESTOCK EPIDEMIC PREVENTION, CONTROL URGED

Kunming YUNNAN RIBAO in Chinese 18 Mar 82 p 1

[Article: "Take Firmly in Hand Spring Prevention and Control of the Spread of Epidemic Diseases in Livestock. Provincial People's Government Issues Notice"]

[Text] On 11 March, the Provincial People's Government issued an "Urgent Notice on Taking Firmly in Hand Spring Prevention and Control of the Spread of Epidemic Diseases in Livestock," requiring that all jurisdictions diligently take firmly in hand prevention of springtime epidemics among livestock and diligently control the spread of epidemic diseases.

The notice said that springtime epidemic prevention work is already underway in Yunnan Province. Some places have taken this work firmly in hand; measures taken have been vigorous, progress has been fairly rapid, and the number of inoculations given fairly high. However, development has been very unbalanced, and as of the end of February, only 30-odd counties in the province had completed their springtime prevention work. In most places, progress has been slow, and the number of inoculations given fairly low. Another 10-odd counties have not gotten underway. March is a key period for conducting spring epidemic prevention inoculation of livestock, and the opportunity cannot be missed. Consequently all jurisdictions are required to conscientiously perform the following tasks.

1. All levels of government are to diligently strengthen leadership of this work, assign a responsible comrade to take charge of it, immediately examine progress that has been made in spring epidemic prevention work, focus on existing problems, and take energetic action. All levels of livestock units must vigorously attend to and conscientiously take in hand spring epidemic prevention work.

2. In places in which the work is being done poorly or has yet to get underway, vocational units are to allocate personnel, expenses and pharmaceuticals necessary for springtime epidemic prevention work to help these places do a good job of springtime epidemic prevention. Places in which genuine hardships exist should allocate needed funds in accordance with pertinent regulations, and practice

dividing up the work and assigning tasks to individuals, bonuses being given for overfulfillment. Needles should be used to assure completion of the province's 70 percent quota for epidemic prevention inoculations.

3. Places that have completed livestock epidemic prevention work should organize booster inoculations and carry out market quarantine work to control the spread of epidemic diseases.

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## YUNNAN

### PROVINCIAL PLANS, METHODS OF IMPROVING RED SOILS REVEALED

Kunming YUNNAN RIBAO in Chinese 25 Mar 82 p 1

[Article by Xue Qirong [5641 0796 2837]: "Improve Red Soil To Hasten Agricultural Development--A Summary of Experiences of Some Areas in Improving Red Soil"]

[Text] Recently at the Provincial Conference for the Spread of Red Soil Improvement Techniques, which was jointly convened by the Provincial Science Commission, the Provincial Agricultural Commission, the Provincial Department of Agriculture, and the Provincial Academy of Agricultural Sciences, it was decided that this year 1 million mu of low yield red soil farmland is to be improved, and before 1985, 5 million mu of red soil farmland throughout the province is to be improved little by little.

What can be done to improve red soil? Some areas' experiences in the improvement of red soil are as follows:

Sensible Phosphate Fertilization. In most red soil regions of Yunnan Province, soil phosphate content is low, and effective phosphate directly usable by crops is even lower; therefore, increased fertilization with phosphate is urgently required as part of the improvement of red soil, solving the effective supply of phosphate at the same time. In the course of their long experience in production and research, agricultural scientists have figured out some sensible techniques for fertilization with phosphate. 1) Increased fertilization of low fertility red soil with phosphate fertilizer. The Soil Fertility Institute of the Provincial Academy of Agricultural Sciences conducted experiments at Longquan Commune in Kunming, which showed that for every 50 kilograms of phosphate fertilizer applied to low fertility red soils, corn yields increased by 439 jin. Use of the same amount of phosphate fertilizer on highly fertile red soils produced yield increases of only 105 jin of corn. Phosphate fertilizer experiments conducted at other places also showed that following: On most low fertility red soils, for every 50 kilograms of phosphate fertilizer used, effectiveness in increasing yields was approximately that of 4,000 jin of barnyard manure, corn yields increasing by from 100 to 200 jin. 2) Concentrated use of phosphate fertilizer for base fertility. When used as a base fertilizer, phosphate concentrates in the crop rhizosphere, reducing the contact surface of the phosphate and soil particles for an increase in utilization rate. Experimental statistics show that when phosphate fertilizer is spread, its utilization rate is a general 10 to 20 percent, when



applied in concentrations, its utilization rate may reach as high as 40 to 60 percent. 3) Use of phosphate fertilizer and organic fertilizer in combination. Use of this method can reduce the active iron and aluminum content of red soil, promote release of soil phosphate, and increase the effectiveness of phosphate fertilizer.

**Active Expansion of the Growing of Green Manure.** Production experiences everywhere have shown that use of green manure on red soil, particularly on low fertility red soil, can remarkably increase grain yields. Statistics from the Soil Fertility Institute of the Provincial Academy of Agricultural Sciences show that when between 1,000 to 4,000 jin of green manure was applied to low fertility red soil dryland fields, corn yields increased by from 4.3 to 36.1 percent for average yield increases of 19.7 percent. For every 1,000 jin of green manure applied to paddy fields, paddy yields increased from 57.3 jin to 133.5 jin, for an average increase of 94.6 jin per mu.

**Adaptation of General Methods to Local Situations in the Use of Lime and Trace Element Fertilizer.** The use of lime or calcareous material to improve red soil has been an effective soil improvement method used by the masses for many years. Experimental statistics show that the spreading of from 500 to 1,500 jin of lime per mu on red soil of average acidity increased corn yields by from 66 to 236 jin. With the application of 3,000 jin per mu of lime, soil acidity decreased; effective phosphate increased; soil water retention and fertility increased; and corn yields increased by more than 100 jin. However, the spreading of lime or calcareous material to improve red soil requires adaptation of general methods to local situations. In places where mostly lime is to be applied, a first application of from 2,000 to 4,000 jin per mu is suitable, followed by a second application 3 to 5 years later. Places using mostly calcareous material (white sand) should apply from 10,000 to 15,000 jin per mu the first time. If lime is well spread, there is no need to mix lime or white sand with phosphate fertilizer as a covering fertilizer; instead the lime can be applied along with barnyard manure. In some of the newly reclaimed areas of Yunnan Province, sandy red soil effective content of trace elements, such as copper, boron and zinc, is low, and if excessive amounts of white sand or calcium-manganese-phosphate fertilizer is applied, effective fertility may be easily reduced. Attention must be given the increase in trace elements. Experiments have shown that use of 3 jin per mu of zinc sulfate as a base fertilizer or use of a from 0.15 to 0.2 solution of zinc sulfate to spray leaf surfaces two or three times can increase corn yields by 100 to 200 jin per mu.

**Deep Plowing and Mixing In of Soil Brought from Elsewhere.** Some places in Yunnan Province have practiced the digging of large pits for use in deep plowing and the mixing in of foreign soil, both of which have shown fine results in improving red soil. Deep plowing and the addition of foreign soil mostly make the friable surface horizon thicker, improve the red soil's physical properties, and regulate the soil's moisture, air and temperature conditions, creating conditions for the transformation of nutrients. According to analysis of equally stiff Milexi soil, the per unit weight of soil to which foreign soil had been added was lighter, its porosity greater, and its moisture content higher than that of either soil plowed by oxen or soil to which no foreign soil had been added. Its effective nutrients also showed remarkable changes, and the thickness of the cultivated horizon was increased.

Reform of the Farming System. Sensible interplanting and intercropping plus crop rotation in a combination of use and nurture of the soil to make full use of the superior natural conditions and latent soil fertility that Yunnan's red soils offer are important links in increasing crop yields, and they are also major ways in which to increase red soil fertility. Experiences resulting from demonstration crop system reform on three red soil plots in Wenshanzhou show that given the same care, intercropping can produce yield increases ranging from 120 to 200 jin per mu more than the growing of a single crop. All jurisdictions can adapt general methods to local situations for the intercropping of long and short stem crops, and for the intercropping of grain, edible oil, pulse, and green manure crops to increase the multiple crop index and to increase ground cover, with benefits for regulation of soil temperatures, humidity and nutrients, to achieve a combination of nurture and use, increased soil fertility, and consistently high yields.

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## BRIEFS

FOOD, GOODS SUPPLIES--Since the beginning of this year, the supplies of nonstaple food and daily-use consumer goods in Yunnan Province have been better than last year. The supply of vegetables is better than last year. According to the statistics of Kunming, Baoshan and Qujing, the quantity of vegetables on sale in the market and the variety of vegetables are both greater than last year. In the first quarter of this year, the province purchased some 748,000 pigs, some 39,000 pigs more than in the corresponding period last year. According to statistics, the number of watches, TV sets and the amount of ginned cotton sold in the province in the first quarter of this year was 48, 35 and 50 percent more than in the same period last year respectively. The supply of small commodities in the province is better than last year. The number of contracts for small commodities signed in the province in the first half of this year was 70 percent more than in the same period last year. There are more small commodities which the masses need, including cotton thread, sewing needles and combs, on sale in the market than last year. The proportion of small commodities to all commodities has increased from 32 percent last year to 35.7 percent now. Matches which were in short supply last year have been in ample supply since the beginning of this year. The amount of matches supplied in the first quarter was 10.6 percent more than in the corresponding period last year. [Kunming Yunnan Provincial Service in Mandarin 1100 GMT 21 May 82 HK]

SUGARCANE PROCUREMENT--Yunnan Province has reaped a good harvest of sugarcane this year. As of 26 May, the province had procured 220,000 tons of sugar, or 40,000 tons more than last year. The province's total sugar output this year has hit an all-time high. By mid-May, the province had produced over 245,000 tons of sugar, or 28 percent more than in the previous year. [OW041437 Kunming Yunnan Provincial Service in Mandarin 1100 GMT 31 May 82 OW]

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JUNE 30, 1982